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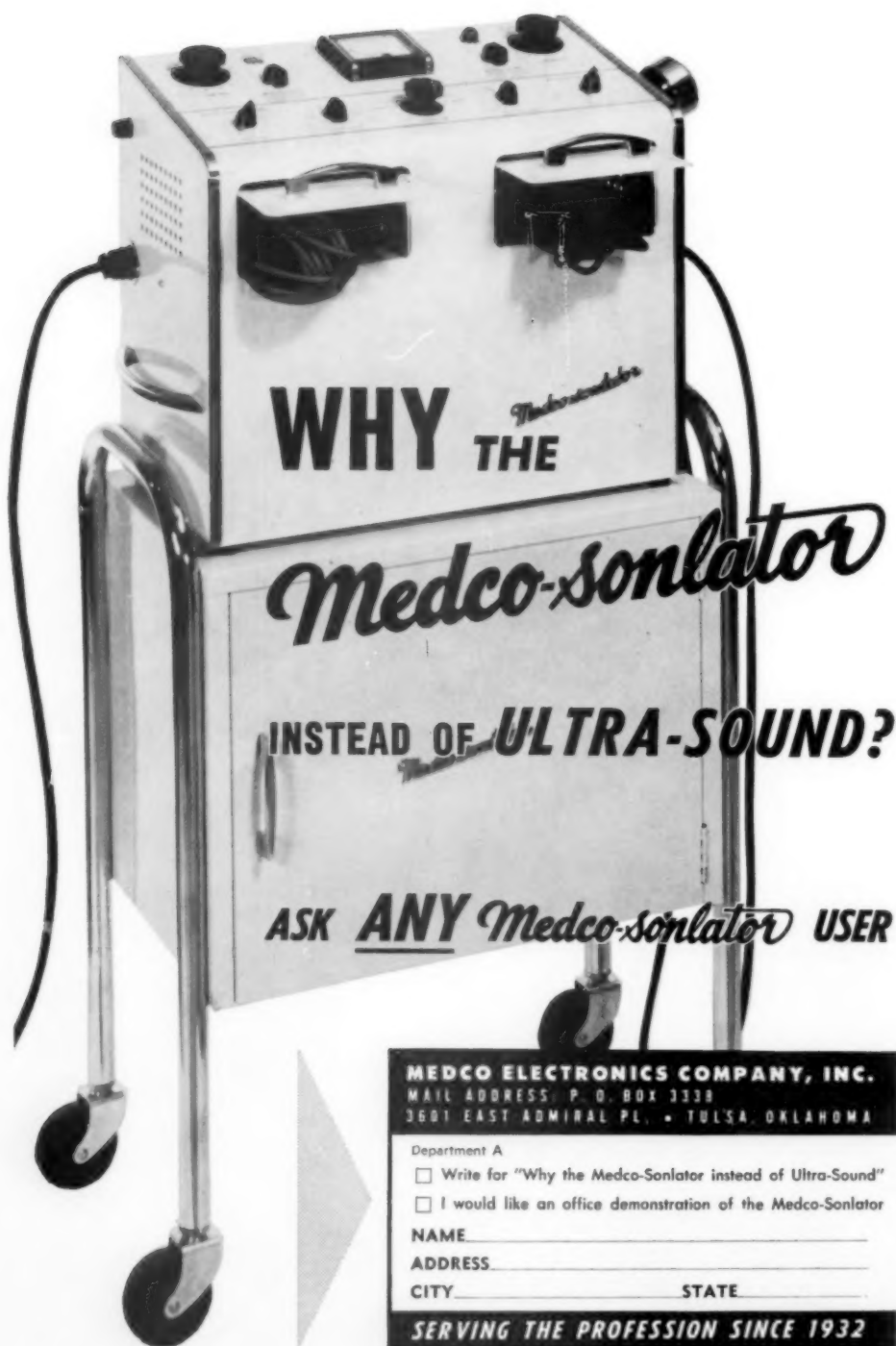
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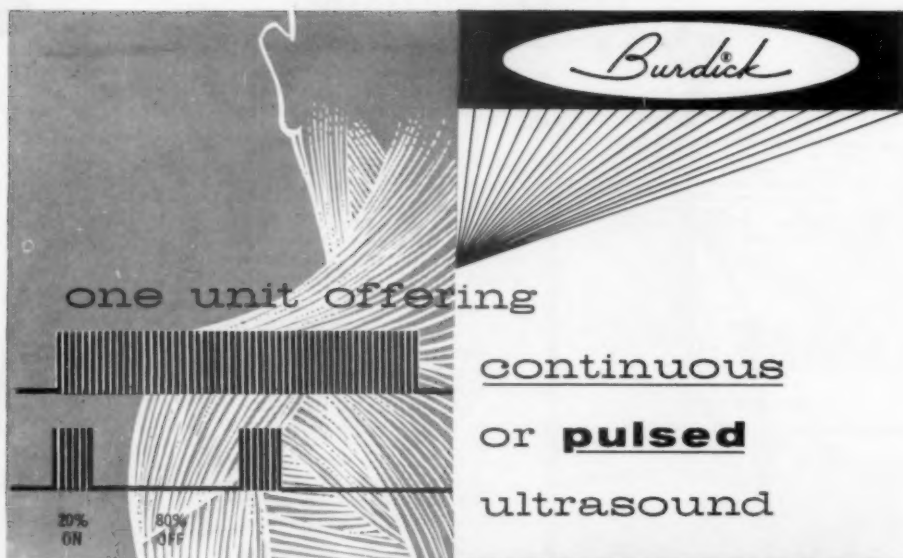
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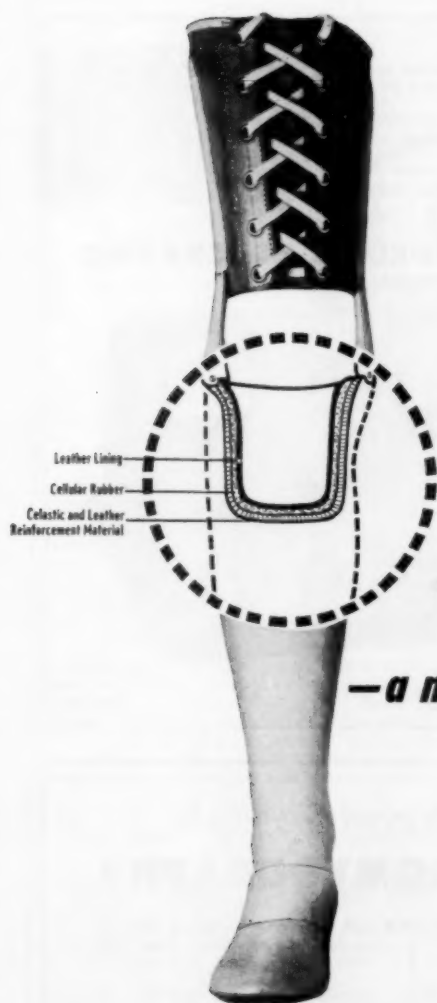


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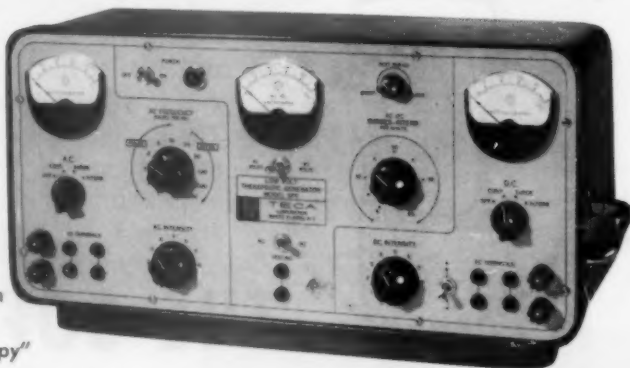
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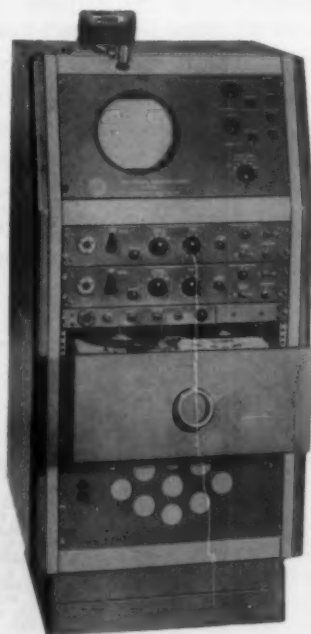
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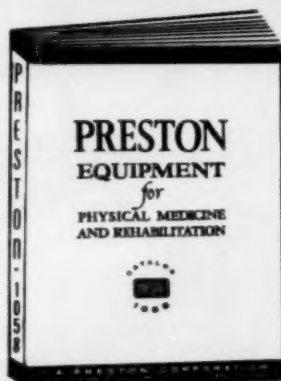
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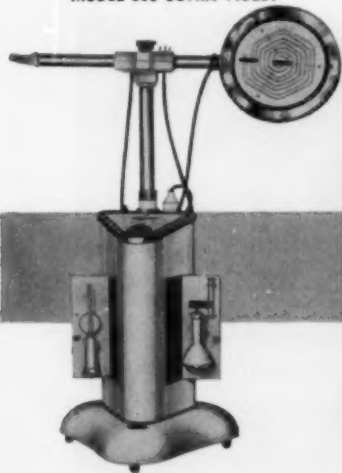
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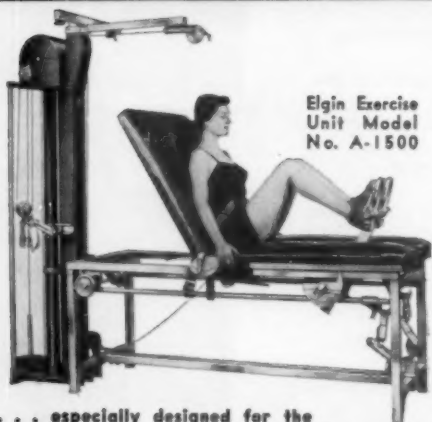
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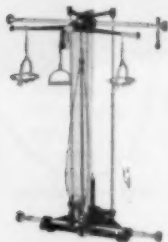


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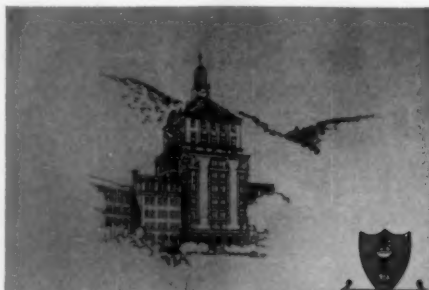
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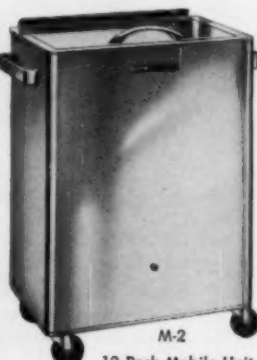
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New York City

● There is prevalent today a relatively widening gap between carefully planned and prepared dietary requirements of chronically ill patients and the actual ingestion of these diets. One of the major causes of this gap is the character of the dental care rendered to both the homebound and the institutionalized chronically ill patient. The quantity of food and the selection of food ingested by patients are influenced and conditioned by dental treatment and the general state of masticatory efficiency of the patient. The ingested diet is also conditioned by the social dietary history of the patients, the grouping of the patients at mealtime, the frequency of mealtime, and the availability and the character of supplementary meals. Dental care when carefully integrated in the scheme of physical medicine and rehabilitation programming can broaden considerably the base of general supportive therapy, not only in implementing nutritional treatment of the patients, but also in contributing to their speech capacity and general esthetic appearance. Thus adequate dental care, with emphasis on the prosthodontic considerations aid in the psychological adjustment of the patients in the management of their chronic illness.

It is the purpose of this presentation to focus attention upon the nutritional and dental care considerations of the chronically sick patient. It is suggested, based upon some preliminary observations, that there is prevalent today a relatively widening gap between the carefully prepared dietary of the chronically ill patients and the actual ingestion of these diets. The observations presented here are based upon statistical and clinical data which represent some preliminary studies of the chronically ill patients at the Bird S. Coler Hospital, New York City. These studies were initiated to provide the basis for a research project on nutritional habits of the chronically ill and their relation to physical medicine and rehabilitation procedures.

As of August 1, 1957, there were 1,813 patients served at each meal. Approximately 25 per cent of these diets were soft diets, and another 25 per cent were modified for other special dietary requirements. The soft diets were requested because the patients had inadequate masticatory and deglutitive capacity; 143 patients were examined consecutively as they appeared for treatment by physical medicine and rehabilitation. They were from four groups: 59 from the active

rehabilitation wards, 22 from the arthritis wards, 35 from the handicapped children's wards, and 27 from the sheltered workshops.

The samplings revealed that approximately 50 per cent of the patients examined had inadequate dentitions for satisfactory mastication. It further revealed that in the four groups examined, the incidence of clinical obesity ranged as follows: 19 per cent for the sheltered workshop patients, 22 per cent for the active rehabilitation wards, 30 per cent for the children's wards, and 41 per cent for the arthritis wards. This high incidence of obesity is very probably related to the high incidence of inadequate masticatory efficiency, and the high percentage of soft diets which the hospital prepared.

It is interesting to note that a review of the literature did not reveal a uniform definition or clinical standard of obesity for either the general population or for the chronically sick population. Therefore, for these preliminary observations, the term obesity implies the clinical impressions of obesity as observed by the medical staff. Since obesity seriously inhibits the physical rehabilitation of chronically sick patients, the proposed study intends to evaluate the criteria of obesity in relation to the chronically sick patient. It is suggested here that the weight-height tables generally referred to are not appropriate guides for application to the chronically sick because the standards of obesity are ill defined.

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Clinical data of the dietary habits of the patients was obtained by photographs and by observation of the patients' behavior during mealtime in the dining rooms, at bedsides, and in the canteens, and by extensive interviews with the therapeutic, nursing, and dietary staffs. The clinical observations of dietary ingestion were organized for consideration into four areas: (1) the effect of masticatory efficiency, (2) the effect of social custom, (3) the effect of hospital regimen, and (4) the effect of related medical conditions.

Effect of Masticatory Efficiency

Patients select food for ingestion which they can masticate and swallow with comfort and with a minimal expenditure of energy. In the aged and the chronically sick, because of poor dentitions, these foods are frequently nondetergent and are high in carbohydrate and low in protein, mineral, and vitamin content. These foods also generally have a high water content or are ingested with large volumes of fluid to facilitate swallowing. The combined effect of such a low protein, high carbohydrate, high fluid diet is that it may lead to obesity. If the carbohydrate is also reduced, according to Mann¹ and Chin,² it leads to malnutrition which is frequently traumatic and associated with a severe and rapid loss of weight with its attending sequelae. Allison³ has demonstrated this with dogs; when their protein stores were depleted by reducing the dietary nitrogen, a restricted calorie intake eventually resulted in irreversible tissue damage. This diet also leads to difficulty in maintaining fluid intake balance with its attendant problems in cardiovascular disease. The effects of such a diet are thus to subvert all rehabilitation objectives by not providing nutrition necessary for cellular integrity, and by disorganizing the activity of the cardiovascular system in its effort to maintain appropriate fluid balance.

It is thus proposed that many patients, even under very active treatment of physical medicine and rehabilitation, do not achieve the optimal benefits of clinical care because the tissues are

denied the necessary nutritive support. Such lack of nutritive support need not be overt and cannot be readily quantitated at this time, but just as Smillie⁴ indicated in 1937 that so-called healthy people can be subject to the subclinical and confusing symptomatology of malnutrition, so too can the chronically ill patient suffer from malnutrition even in a maximum hospital facility.

It is suggested that malnutrition can be related to the absence of appropriate dental care. Dental care of an appropriate nature may not be actively pursued because there is unfortunately prevalent among many physicians and ancillary medical personnel associated with the care of chronic illness a casual disregard for masticatory function. This attitude stems from the following common assumptions: (1) Elderly and chronically ill patients require little food because of their reduced activity; (2) an adequate diet can be provided for patients by the use of blending and macerating devices; (3) supplementation of diets by synthetic products is an adequate means of providing sufficient nutritive elements.

These assumptions are incorrect. There is sufficient evidence to demonstrate that only caloric requirements are diminished by inactivity, and that in the aged, particularly, certain nutritive substances, such as protein should be proportionately increased to maintain nitrogen balance. The second assumption that macerating food makes masticatory efficiency less necessary, holds true for short-term illness but not for long-term illness. This assumption denies the patient's whole social history in which mealtime has marked psychological impact upon the patient's state of well-being. The third assumption that synthetic dietary supplements can provide an adequate diet holds true only for specific deficiency diseases. Synthetic supplements are of inestimable value in cases of severe frank insufficiency disease but should not ordinarily be used for routine supplementation. Treatment, according to Spies, should always be directed toward maintaining the patient's metabolism on a good dietary rather than routinely depending upon supplements.

Effects of Social Custom

Patients select and ingest food in accordance with their social customs and experiences. The best intentioned dietary planning must account for this experience of the patient in taste and in preparation of food; that is, the size of the food particles, the method of cooking, the temperature of the food, and the place and the time for the service of food. It is customary in acute and chronic disease facilities to plan diets for medical reasons on a modified or restrictive basis for individual patients in order to prevent exacerbation of disease processes. (Coler, for example, has 25 per cent special diets.) However, it may be desirable in addition to plan diets by catering to individual patients or groups by including favored foods just as family customs do, providing it does not conflict with medical planning. For example, one county general hospital provides for its foreign-born out-patients a dietary list of native foods. Other considerations are to provide supplementary meals; that is, to provide four meals a day for certain groups of patients, such as the aged, or to reorganize the mealtimes to conform with a patient's experience when he first enters from the home situation into the hospital routine. It is also observed that dental care may restore for a hospitalized or homebound patient an ideal dentition capable of masticating a satisfactory diet; but unless the patient is also encouraged to learn appropriate dietary habits, he may persist in improper selection of food.

There are many examples of social custom where certain foods are reserved for periods of illness. It is not uncommon for a visitor to an aged patient to bring some favored food and for this to have a very salutary effect upon the patient's well-being. It is the custom, for example, in Japan for families to bring food to hospitals. Such practices are thought to reduce the length of the patient's stay.

We would do well to re-evaluate a dietary program and take into consideration the patient's social and national experiences. It is interesting to quote from Snapper:⁵ "The occidentals are

just as proud of their blatantly excessive food intake as the orientals are of their semi-starvation diets."

Snapper's comments are quoted only to focus attention upon the fact that many patients come to our hospitals with years of tradition and social experience which do not readily lend themselves to our standardized concepts of diet.

Effect of Hospital Regimen

Patients select and ingest food in conformity with the requirements of the table or dining room companions, supervisory personnel, and administrative regulations. Patients tend not to take longer than their dining companions do at mealtime, so they frequently leave food on the dishes when they cannot masticate properly rather than take longer to masticate before deglutition. The choice of swallowing unchewed food is frequently associated with gastrointestinal disturbances, so some patients prefer to leave the food uneaten. Psychological difficulties at mealtime are frequently caused by the facial appearance of the patient himself or the appearance of others who may dribble saliva, regurgitate food, or exhibit poor social eating habits. Psychological pressures may also be generated by unsympathetic serving personnel or administrative regulations which do not provide sufficient time for mastication at meal hours, do not provide self-help aids to bring food to the mouth and help retain it in the mouth, or do not provide sufficient nursing aids to help feed the handicapped and the aged.

One of the major reasons for leaving food on dishes is the monotony of diets which frequently results from cost economy practices, inventory control difficulties, and lack of imagination in the preparation of foods. Still another deterrent to satisfactory ingestion is the boredom and hostility generated before mealtime because of a lack of a recreation program during the four or five hours a day devoted to meals.

At Bird S. Coler Hospital, when we treat children, we supervise very carefully their dental care requirements. Mealtime is very carefully planned by having suffi-

cient attendant and nursing care and food intake is carefully noted. An effort is made to group children according to age, interests, and manual dexterity during the feeding period. This careful supervision is compelled by medicine's long interest in the problems of nutrition in relation to growth and development in children. However, in the adult program at Coler, there is no comparable supervision for comprehensive dental care; no comparable planning of mealtime supervision other than self-feeding except, of course, for the severely handicapped; and no records of actual food ingestion. This is not a criticism of Bird S. Coler Hospital, but rather a comment that the treatment of the aged and the chronically ill has yet to develop the tradition of making controls over nutrition and ingestion mandatory as they are in a children's program. It is here suggested that adult programs for the chronically ill should include observation and notation of the character and quantity of food ingested by patients.

Effect of Related Medical Conditions

Patients may present poor dietary habits and reduce the quantity of ingested food for medical reasons. Careful observation of dietary habits will demonstrate the need for examination by the physician of related tissues and of behavior patterns. The findings may relate the difficulties of ingestion to some disease process other than masticatory difficulties. They are, for example:

1. Persistent heartburn due to too rapid ingestion of food; eating when tense, fatigued, or overstimulated; and excessive smoking and alcoholism.
2. Inflammation, ulceration, proliferation and tumors of the tissues of the mouth, pharynx, and esophagus.
3. Functional dysphagias due to unstable emotional personality.
4. Dysphagias due to diseases of the neuromuscular and musculoskeletal system.

Such symptomatology associated with the masticatory function frequently is the first sign of a psychological disorder or

some pathological process which requires almost immediate attention.

It is to be noted that proper ingestion of adequate nutrition is not only a factor in chronic disease hospitals, but also in nursing homes and in the patient's home. Several studies by the Nassau County Department of Health of New York State on the dietary programs of nursery homes indicated that considerable effort was directed by the nursing home operators to the preparation of adequate diets, but that little attention was directed to the actual ingestion of food by the patients. The studies recommended that a careful investigation of the quantities of food ingested by patients be made. Hennessy of the Visiting Nurses' Association of New York, which makes 1,000 home visits daily, reports that one of the most striking observations of its visiting nurses is the high frequency in the home setting of tea-and-toast meals for chronically sick patients.

Summary and Conclusion

In the Bird S. Coler Hospital, in other institutions, and in the home setting, chronically ill patients have a high incidence of dental disability. The quantity and selection of food ingested by these patients is conditioned unfavorably by their reduced masticatory efficiency. The ingested diet is also conditioned by the social dietary history of patients, the grouping of patients at mealtime, the frequency of mealtime, and the availability and the character of supplementary meals. Obesity inanition and the ingestion of soft diets have a high correlation to the incidence of dental disease and masticatory disability.

It is suggested that, based upon these preliminary studies, comprehensive dental care when judiciously integrated into the scheme of rehabilitation programming can broaden considerably the base of supportive therapy, not only by implementing nutritional treatment of patients, but also by contributing to their speech capacity, to their general esthetic appearance, and consequently to their psychological adjustment to their disabilities. Since, according to the Com-

mission on Chronic Illness, there is considerable evidence indicating that malnutrition plays an important role in the development and the course of chronic diseases, it is further suggested that the specialty of physical medicine and rehabilitation direct its attention to providing and investigating optimal nutritional support for the patients under its supervision.

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IMPORTANT ANNOUNCEMENT

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Pain Threshold Measurements After Therapeutic Application of Ultrasound, Microwaves and Infrared

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● Pain threshold measurements have been made with the Wolff and Hardy method after application of ultrasound, microwaves and infrared to volunteers. It was found that the pain threshold was increased when these modalities were applied to the peripheral nerve trunk and the pain threshold measured in the area of the nerve distribution. The pain threshold was also elevated when these modalities were applied directly to the same area where the pain threshold was determined afterwards. These results could be obtained only if comparatively high doses were applied.

Many clinicians have obtained the impression that ultrasound relieves painful conditions, such as sprains^{1, 2} and postherpetic neuralgia.^{3, 4} Also the pain caused by postoperative neurofibromas seemed to be improved.⁵⁻⁷ These clinical observations so far lack any experimental and physiologic basis. It is not known whether the relief of pain occurred as a result of the direct influence of the ultrasonic energy on the peripheral nerve or the pain receptors, or occurred indirectly by improving the pain-causing condition.

Even if little is known of the physiologic basis of a possible pain-relieving effect of ultrasonic energy, experimental investigations have clearly demonstrated that the peripheral nerve function could be altered by application of ultrasound.^{8, 9} It was found that the action potential and the conduction in the isolated nerve were altered as a result of the rise of temperature which occurred within the nerve during exposure to ultrasound. It was found that different types of nerve fibers exhibited differences in sensitivity to ultrasound. This difference in sensitivity of various fibers to ultrasound could be explained on the basis of their sensitivity to heat; however, no correlation could be established between the fibers most sensitive to the sound and those fibers which carry pain impulses. This was not possible since it was not known which type of nerve fiber conducts

pain impulses in the bullfrog nerve used for this investigation.¹⁰ Furthermore, it was found that the nerve in situ was selectively heated by the application of ultrasound.^{11, 12} Finally, it was observed that ultrasound applied to the ulnar nerve in humans produced an increase of the threshold of vibration perception.¹³

In summary, the clinical observation that ultrasound may relieve pain directly or indirectly, together with the experimental observations, suggested that it might be of interest to measure the pain threshold after exposure of the peripheral nerve and the pain receptors to ultrasound and compare the effects produced with those obtained by treatment with microwave diathermy and infrared application. It was hoped that this investigation might furnish a basis for the clinical observations that ultrasound has an analgesic effect and might clarify the point whether the pain relief was obtained by the application of ultrasound to the peripheral nerve or to the area of the pain receptors. It was also hoped that this study might contribute to the question of whether or not the observed effect could be explained on the basis of the rise of temperature resulting from the absorption of the ultrasonic energy.

Methods

The method of Hardy, Wolff, and Goodell was used with two modifica-

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tions. These modifications were considered necessary since subsequent work has shown that pain threshold measurements are influenced by such variables as the skin temperature prior to measurement and vasomotor tone.¹⁴ Also it has been found that the first sensation of pain was perceived when a certain temperature threshold was exceeded at the pain receptors.¹⁵⁻¹⁹ It therefore can be assumed that the determination of the surface temperature of the skin at which pain occurs is a more reliable indication of the pain threshold than the measurement of the heat output of the apparatus or the amount of infrared radiation incident at the surface of the skin. It can be assumed that the skin temperature at which pain occurs is independent of the amount of blood flow through the skin and of the skin temperature before the experiment.

The modifications of the original technic of Hardy, Wolff, and Goodell were as follows: First, the amount of radiant heat incident at the skin was varied by adjusting the voltage applied to the heating coil. This was done by means of a variable auto transformer. The transformer readings were used as a relative measure of the change in the amount of infrared incident at the skin. Second, the skin surface temperature was registered with a thermistor of a diameter of approximately 1/3 mm. This unit was held in close contact with the skin by a wire cross attached to the aperture of the apparatus for pain threshold measurements. The skin temperature was registered at which pain occurred.

Since previous investigations have demonstrated an appreciable individual variability of the pain threshold as recorded with the Hardy, Wolff, and Goodell method,²⁰⁻²² and since the pain threshold varied from one area of the body to the other, the pain threshold in a group of 49 volunteers was determined, each subject serving as his own control. The measurements taken on one side of the body were compared with those obtained in the corresponding area on the other side of the body.

An incidental finding was that the variability between these measurements on symmetrical areas of a given subject at one sitting was less than that which was obtained in any of the following situations: (1) one area to the other on the same person at one sitting, (2) the same area from person to person, (3) the same area on one person from day to day. It was also found that the pain occurred at a measured skin temperature of 49.3 to 52.0 C., if the pain threshold was tested over the pad of the little finger. These values are appreciably higher than those determined by Hardy, Wolff, and Goodell,¹⁸ while Weitheimer, and Ward, found in other areas that the temperature in the area of the pain receptors was between 44.1 and 44.9 C. This discrepancy is probably based on the fact that they indirectly determined the temperature which actually caused the irritation or the stimulation of the pain receptors in the skin tissues, whereas we made a direct measurement of the surface temperature of the skin in an area where no pain receptors are found.

Experiments

The ulnar nerve of ten volunteers was treated with ultrasound at an intensity of 1.5 watts per square centimeter with a total output of 10.5 watts. The frequency of the generator was 800 kilocycles per second.* The ultrasound was applied in a water bath at 35 C. for two minutes. The applicator was kept at a distance of approximately 0.5 cm. from the surface. The applicator was moved back and forth over an area of 2.5 x 5 cm. The length of the strokes was approximately 2.5 cm. The ultrasound was applied over the ulnar nerve in the ulnar groove of the humerus. This ultrasonic dose was the highest tolerated under the conditions of the experiment. Occasionally pain occurred during treatment. The pain threshold was tested over the pad of the little finger. The nerve on the other side was treated in exactly the

*The generator was supplied for this study by the courtesy of the Burdick Corporation, Milton, Wis.

same fashion, but without ultrasonic output. The pain threshold was tested within 30 minutes after each application. The results are shown in table 1.

Fisher's *t* test was used for statistical evaluation of paired values. The ultrasound was applied in alternating sequence to the right and left ulnar nerves of the series of subjects. It was assumed that observed differences were statistically significant if the *P* value was smaller than .01. Table 1 shows that the skin surface temperature at which pain occurred was definitely lower on the side of the placebo application than on the side treated with ultrasound. This result suggests that ultrasound applied to the peripheral nerve had a true analgesic effect.

In another series of ten volunteers, the ulnar nerve was exposed to radiant heat at the elbow. The same area was treated as in the experiments with ultrasound. The rest of the extremity was shielded by towels. The infrared (Burdick Zoalite) lamp was placed so close to the skin that occasionally a mild pain occurred at the surface of the skin. The

arm was exposed to infrared for 15 minutes. The other side served as control. Again the pain threshold was tested over the pad of the little finger. The results are shown in table 2. Infrared produced a significant increase of the surface skin temperature at which pain occurred; in other words, infrared, if applied to the area of the ulnar nerve, produced an analgesic effect.

The third series of ten volunteers was treated with ultrasound. The technic used was essentially the same as described in the previous series; however, the ultrasonic energy was applied to the pad of the fifth finger and to the same area where the pain threshold was later determined. The ultrasonic applicator was moved back and forth over this area. The results are demonstrated in table 3. Again it was found that the skin surface temperature at which pain occurred was higher than on the side of the placebo application. In addition to this analgesic effect, it was found that a significant increase of the skin temperature occurred after treatment.

A fourth series of ten volunteers was treated with radiant heat. The radiant heat was applied to the pad of the little finger and the pain threshold determined subsequently in the same area. As is shown in table 4, the skin surface temperature at which pain occurred was again significantly higher on the treated side than on the side used as control. We also found that the skin temperature after treatment with infrared was significantly increased.

Finally, ten volunteers were treated with microwaves (Raytheon's Microtherm) applied to the ulnar nerve. Ten volunteers were treated with microwaves applied to the pad of the little finger. The C director was used; the distance between skin surface and reflector was 3 inches. The time of exposure was 15 minutes. The same statistical evaluation was used as in the other experiments. One arm was treated while the other served as control. The most striking result of this set of experiments was the extreme variability. In some cases a very marked analgesic effect was obtained, in other cases nothing was found. In some

Table 1: Ultrasound Applied to the Ulnar Nerve at the Elbow. Pain Threshold Tested on the Pad of the Little Finger.

	Mean Values after Exposure to Ultrasound	Mean Values of Controls
Skin temperature after treatment	31.6 C.	31.8 C.
	<i>P</i> = .79	
Infrared output at pain threshold (arbitrary scale)	74.2	73.1
	<i>P</i> = .09	
Skin temperature at pain threshold	50.5 C.	49.9 C.
	<i>P</i> < .01	

Table 2: Radiant Heat Applied to the Ulnar Nerve at the Elbow. Pain Threshold Tested on the Pad of the Little Finger.

	Mean Values after Exposure to Infrared	Mean Values of Controls
Skin temperature after treatment	35.0 C.	33.9 C.
	<i>P</i> < .01	
Infrared output at pain threshold (arbitrary scale)	71.2	70.0
	<i>P</i> = 2.3	
Skin temperature at pain threshold	49.7 C.	49.3 C.
	<i>P</i> < .01	

Table 3: Ultrasound Applied to the Pad of the Little Finger. Pain Threshold Tested in the Same Area.

	Mean Values after Exposure to Ultrasound	Mean Values of Controls
Skin temperature after treatment	34.2 C.	33.0 C.
	$P < .01$	
Infrared output at pain threshold (arbitrary scale)	74.3	74.9
	$P = .95$	
Skin temperature at pain threshold	52.0 C.	51.2 C.
	$P < .01$	

Table 4: Radiant Heat Applied to the Pad of the Little Finger. Pain Threshold Tested in the Same Area.

	Mean Values after Exposure to Ultrasound	Mean Values of Controls
Skin temperature after treatment	35.97 C.	31.17 C.
	$P < .01$	
Infrared output at pain threshold (arbitrary scale)	74.1	73.6
	$P = .8$	
Skin temperature at pain threshold	51.0 C.	50.5 C.
	$P < .01$	

cases a pronounced hyperemia was produced in the area treated, in other cases this was much less marked. Since the data were so inconsistent from subject to subject, the differences between the mean values obtained on the side used as control and the treated side were not statistically significant.

A clinically significant effect on the motor and sensory function of the nerve could not be demonstrated in any of the experiments described.

Discussion of Results

It could be demonstrated in this study that ultrasound and infrared, when applied to the area of the ulnar nerve — located superficially beneath the skin at the elbow, produced an analgesic effect in the area supplied by the same nerve, distal to the site of the application. These data are in agreement with experimental findings which demonstrated that the conduction of impulses through isolated nerves can be blocked temporarily by application of heat or ultrasound. Ultrasound produced the effect on the nerve in these experiments as a result of

a rise of temperature which occurred due to the absorption of ultrasound.

Furthermore it was observed in this study that ultrasound and infrared produced an analgesic effect when the modalities were applied to the skin in an area where the pain threshold was later tested.

Even if the effects observed were statistically significant, they were not pronounced. It therefore still seems to be debatable whether or not these findings can be considered as a basis for the clinical observation that ultrasound can relieve painful conditions. Further experimentation seems to be necessary to clarify whether this observed effect significantly contributes to the clinical results, especially since it is conceivable that ultrasound might aid in relieving the cause of the painful condition, just as does any other type of heat therapy. Also subclinical side effects on the sensory or motor function of the nerve should be ruled out. Of course if this observed analgesic effect could be considered as a basis for the clinical observations that ultrasound produced a relief of pain, it is conceivable that ultrasound might on some occasions produce such an analgesia where other modalities, such as infrared, would fail. This can be assumed, since Rosenberger found that it is possible to selectively heat a peripheral nerve deep inside the tissues which cannot be heated adequately by the application of radiant heat or infrared. With this exception the experiments of our study did not suggest that any other effect beside the heating effect of ultrasonic energy played a major role in causing the elevation of the pain threshold.

It is also of interest to note that the experiments in which microwaves were applied in the same fashion as ultrasound or infrared did not produce any consistent analgesic effect and that a much greater variability was observed in the microwave experiment. Since microwaves are certainly an efficient heating modality, these results might perhaps be interpreted by the fact that microwaves are reflected at the bony interfaces,²³ that they are also reflected at the muscle-subcutaneous fat interface, and that this

amount of reflection might critically vary with the thickness of subcutaneous fat. These difficulties have recently been emphasized by Schwan²⁴ and his co-workers who demonstrated that variable results could be expected if microwaves of the high frequency of 2,400 megacycles are used for therapeutic applications. Similar results obtained with different methods were published recently by Koppel.²⁵

Summary

When ultrasound and infrared were applied to the area of the ulnar nerve at the elbow, an analgesic effect was found distally in the area supplied by this nerve. These findings are in agreement with previous experimental evidence, obtained in isolated nerves or in small animals, which demonstrated that the nerve conduction could be temporarily blocked by heat application or by the rise of temperature which occurred as a result of the absorption of ultrasonic energy. When infrared or ultrasound were applied to the skin and the pain threshold was tested in the same area after treatment, it was again found that an analgesic effect could be produced.

When microwaves were applied in similar fashion to the peripheral nerve or the skin, it was found that the results varied widely and no statistically significant result could be obtained.

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Establishment of Oscillometric Clinical Norms for Arterial Circulation in the Legs in Arteriosclerotic Obstructive Disease

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Minneapolis

● Disability, and ultimate loss of extremities, is increasing as a result of decreased arterial circulation due to arteriosclerosis in an aging population. Early discovery and proper management at the various stages of the disease can shorten disability and prevent amputations. Because of this, it is important to be able to evaluate the degree of arterial circulation and to localize the site of obstruction. By observation and measurement on a series of cases, using the oscillometer, it is possible to establish certain clinical norms. These norms are the gangrene point, i.e., the readings below which gangrene is imminent; the ulcer healing point, i.e., the readings below which an ulcer will heal slowly or not at all; amputation site healing point, i.e., the readings above which the amputation site will heal readily; amputation site weight-bearing point, i.e., the readings above which a prosthesis can be used without fear of stump breakdown and above which there is also a margin for future deterioration of the circulation, and lower limit of normal point, or walking point, i.e., the readings below which a person will complain of symptoms of arterial insufficiency when walking. These norms have been found very useful in peripheral vascular work.

Due to arteriosclerosis in a rapidly increasing number of long-lived people, we are faced with a great number of patients with obstruction of the arterial supply, be it to the heart, the brain, the kidneys, or the extremities. The Social Security Administration¹ has estimated that in 1970 there will be in the United States a minimum of 18,500,000 people over 65; 3,145,000 of these will have diseases of the circulatory system, chiefly arteriosclerosis. Add to these, those under 65 with arteriosclerosis, and we will have a tremendous problem.

In the lower extremities, loss of arterial circulation leads to well-known symptoms. First, there is tiredness in legs on walking, followed by cramps, and ultimately gangrene of distal parts, with loss of limb or life. At the VA Hospital in Minneapolis, there were during 1950-1952, 25 amputations. This increased to 79 during 1953-1955, or more than tripled.

With medical management of arteriosclerosis looming on the horizon as a possibility, it becomes important to detect obstructive processes before surgery is the only solution. However, to detect early obstructive disease of the arteries is at present difficult because we have no

reliable norms or tests to guide us. The arterial circulation varies from activity to activity and from person to person. Furthermore, if an oscillometer is used in evaluating the peripheral circulation, the magnitude of the readings depends upon what instrument is used, and at what site the readings are taken. Table 1 shows normal oscillometric readings as given by Samuels² and by Collens and Wilensky.³

Atlas⁴ in 1939 recognized the absence of norms in peripheral vascular work and proposed that the ratio between the oscillometric index at the lower leg and that at the lower part of the forearm be used to detect early arteriosclerosis. The ratio should normally be "1" and if lower would indicate decreased arterial pulsation in the lower leg. The figures obtained represent, however, only a ratio and not an absolute amount. Furthermore, the ratio depends upon the circulation in the forearm, and if this is changed, then the ratio will not hold.

In 1951, the author advocated the evaluation of the arterial circulation in the legs on the basis of: (1) basic resting circulatory requirement, (2) basic walking requirement, and (3) amputation site requirement.⁵ The work reported here is an attempt to refine and extend this method.

The "basic resting circulatory requirement" is the arterial blood supply needed to barely nourish the tissues under resting conditions. If the blood supply goes below this, then gangrene of the distal parts will set in. The "basic walking requirement" is the arterial blood supply needed to be able to walk 120 steps a

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Table 1: Normal Oscillometric Readings

	Foot	Ankle	Calf	Lower Thigh	Upper Thigh	Mid Thigh
Samuels	0.5-4	1-10	3-10	4-14	4-6	
Collens and Wilensky	Tr.-1	1-5	5-12			8-15

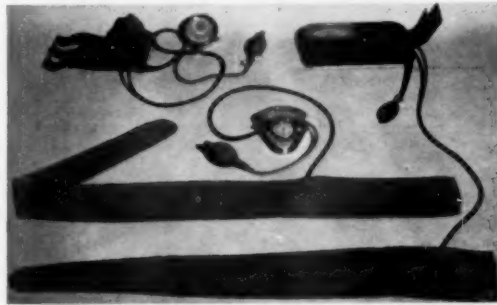


Fig. 1 — Upper left; Von Rechlinghausen type of oscillometer, made in Germany. Upper right; oscillometer made in the United States on Pachon's principles. Center; Pachon type of oscillometer made in Germany. All three show different readings when used.

minute for a certain distance, on a level floor, with shoes on, and barely tiring in the legs. The "walking requirement" can also be called the lower limit of normal, or "walking point." Blood supply above these requirements permits longer walking, and running various distances, the condition of the heart being good.

Method

The oscillometers used in this work are based on Pachon's principles. Three similar instruments were used and checked against each other for conformity and reliability in readings. A special cuff was made for each instrument with a bladder 16 inches long and 4 inches wide, with a wrapping tail 40 inches long. This permits the taking of readings all along the extremity up to the groin. Readings have been taken in temperature-controlled rooms with a temperature of 20 to 22 C., after the patient had rested 20 minutes, as well as at room temperature with the patient resting only 5 minutes. No essential difference was found. Marked differences were found in normal people before and immediately after work by the calf muscles. Differences were also found when a new stiff cuff was used instead of an old pliable one. Marked differences

were noted between oscillometers of various manufacturers. Figure 1 shows three different oscillometers.

To get a norm for oscillometric readings in the lower extremities, various groups of people, considered to be in excellent health, were studied with the subject at absolute rest. Readings were taken first at the instep, then just above the lateral malleolus of the ankle, below the head of the fibula, above the condyles of the femur, in the mid thigh, and just below the groin. These served as landmarks to insure uniform location of the cuff, which is essential. In addition, readings were taken at the wrist and above the elbow, with the styloid process of the radius and epicondyles of the humerus serving as lower landmarks. Readings were generally taken at pressures of 140, 120, 100, 80, and 60. All readings were recorded and the highest reading attained at any blood pressure, called the oscillometric index, was determined. Table 2 shows the variations in the oscillometric index obtained from the legs in various groups of people, and table 3 shows the averages.

There are variations from group to group and at all levels. The average of the group readings can be used as a general norm, somewhat like the norm

Table 2: Variations in Oscillometric Indexes in Legs of Various Groups

	Left Instep	Above Ankle	Below Knee	Right Instep	Above Ankle	Below Knee
5 Girls 7-14 yrs.	Trace to $\frac{3}{8}$	$1\frac{3}{8}$ to 3	4 to 6	$\frac{3}{8}$ to $\frac{1}{2}$	$1\frac{3}{8}$ to $2\frac{1}{2}$	5 to 7
4 Women 23-33 yrs.	$\frac{3}{4}$ to $1\frac{1}{4}$	$2\frac{1}{4}$ to 3	4 to 9	$\frac{3}{4}$ to 1	$1\frac{3}{4}$ to $2\frac{1}{4}$	5 to 6
8 Runners 16-17 yrs. (100-800 yds.)	Not done	$1\frac{1}{2}$ to 5	5 to 8	Not done	$1\frac{1}{2}$ to 5	5 to 8
5 Oarsmen 29-32 yrs.	$\frac{1}{2}$ to $2\frac{1}{2}$	4 to 6	6 to $10\frac{1}{2}$	$\frac{3}{4}$ to $1\frac{1}{2}$	$3\frac{1}{2}$ to 4	$7\frac{1}{2}$ to 9

Table 3: Averages of Oscillometric Indexes in Various Groups

	Left Instep	Above Ankle	Below Knee	Right Instep	Above Ankle	Below Knee
5 Girls 7-14 yrs.	$\frac{1}{2}$	$2\frac{1}{4}$	$5\frac{1}{4}$	$\frac{3}{8}$	$2\frac{1}{4}$	$5\frac{1}{2}$
4 Women 23-33 yrs.	$\frac{3}{4}$	$2\frac{1}{2}$	6	$\frac{3}{4}$	2	$5\frac{1}{2}$
8 Runners 16-17 yrs. (100-800 yds.)	Not done	3	6	Not done	3	6
5 Oarsmen 29-32 yrs.	$1\frac{1}{2}$	$4\frac{1}{2}$	8	1	$3\frac{3}{4}$	$8\frac{1}{2}$
Averages	$\frac{3}{4}$	3	$6\frac{1}{2}$	$\frac{3}{4}$	$2\frac{3}{4}$	$6\frac{1}{2}$

Table 4: Oscillometric Indexes in Legs of 12 Healthy Males

Oscillometric Index	Instep	Above Ankle	Below Knee	Age	Weight
Lowest	$\frac{1}{4}$	$2\frac{1}{4}$	6	29 yrs.	185 lbs.
Highest	$1\frac{1}{4}$	5%	$15\frac{1}{2}$	49 yrs.	205 lbs.
Average of 12	$\frac{3}{4}$	4	7	44 yrs.	170 lbs.

120/70 is used in the field of blood pressure. It should be understood that these readings permit extensive activity of the legs, such as running, without the legs tiring.

However, people come to their physicians only when there are symptoms after walking. Such symptoms can be due to neurological, muscular, and bony defects as well as circulatory defects. If the oscillometric index for the legs is at or above the average norm, which can be called the "running point," we know that the patient should be able to run. We still do not know when he is unable to walk because of decreased arterial blood supply in the legs.

Two tests were done to set up a norm for walking. First, 12 healthy, working males were tested with the oscillometer and then made to walk 500 steps at the rate of 120 steps a minute. None of them expressed any feeling of tiredness in the legs. Table 4 shows the lowest, the highest, and the average oscillometric index. The male with the heaviest build had the highest reading, and the one with the smallest had the lowest. The

fluctuations are wide and the figures are valueless as norms.

The next step was to do oscillometric and walking tests on patients complaining of tiredness in one or both legs on walking. Twenty-six patients were thus tested and arranged in 6 groups according to steps walked before barely tiring in the legs. Table 5 shows the results.

An objection to this test is that "tiredness" can be interpreted differently by different individuals. However, all patients were instructed in the difference between "tiredness" and "cramps" and many walked and were clocked at both points.

For this reason, it is believed that the figures are fairly reliable, and that we can draw the conclusion from table 5, that the oscillometric index, as presented, can serve as an expression of walking ability, within limits. If that is so, we have the possibility of developing a very useful norm, that is, "basic walking circulation" norm or "walking point." This would be the oscillometric index permitting the patient to walk in the specified manner a distance that would

Table 5: Oscillometric Indexes in 26 Patients Tiring in Legs After Walking a Certain Distance*

No. Patients	Steps	Average Oscillometric Index			
		Average Steps	Instep	Above Ankle	Below Knee
4	50-100	95	0	$\frac{1}{8}$	$\frac{1}{2}$
6	100-150	135	Trace	$\frac{1}{4}$	$\frac{3}{4}$
3	150-200	170	Trace	$\frac{1}{2}$	1
8	200-250	220	Trace	$\frac{3}{4}$	1
3	250-300	285	$\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{4}$
2	300-500	420	$\frac{1}{2}$	2	3

*Readings are for the leg tiring first.

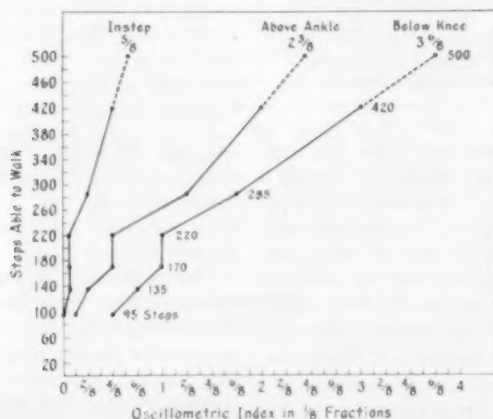


Fig. 2 — Graph showing relationship between oscillometric index and number of steps a patient is able to walk before tiring in the legs, walking at 120 steps a minute.

be considered normal. This could then be used in differential diagnosis as well as in determining the early onset of obstructive disease of the arteries in the lower extremities.

However, the difficulty is to agree on a "normal walking distance." Most patients consult a physician when able to walk only $\frac{1}{2}$ to $1\frac{1}{2}$ blocks. Thus it would seem that they are satisfied to be able to walk 2 blocks. The City of Minneapolis defines a block as 330 by 660 feet. The long side of the block would equal a distance of 1,320 feet for 2 long blocks' walk or approximately $\frac{1}{4}$ mile or 500 steps, each about $2\frac{1}{2}$ feet long. To determine the oscillometric index for this walk by actual tests on patients is difficult because they do not present themselves until that stage is passed. However, by plotting the data at hand, we can do it (see fig. 2). The distances and the oscillometric indexes at

the various levels are plotted against each other and then carried up to 500 steps. The oscillometric index for this then comes out as follows: $\frac{5}{8}$ at instep, $2\frac{3}{8}$ above ankle, and $3\frac{3}{4}$ below knee. For ease of memory and for ease of calculation, I am rounding these figures to $\frac{1}{2}$ at instep, $2\frac{1}{2}$ above the ankle, and 4 below the knee, and consider this the "basic walking circulation." This reading permits a $\frac{1}{4}$ -mile walk or 2 long blocks or 4 short blocks at a rate of 120 steps a minute and barely tiring in one or both legs at the end of the walk, depending upon what leg is affected by obstructive arterial disease.

To determine at what point gangrene is imminent, oscillometric tests were done on 13 patients with marked cyanosis of toes or early minimal gangrene of one toe. Table 6 shows the results.

With "0" at instep, "0" above ankle, and $\frac{1}{8}$ below the knee, there is imminent

Table 6: Oscillometric Readings in 13 Patients with Marked Cyanosis of Toes or Minimal Gangrene of One Toe

	Instep	Above Ankle	Below Knee
Variations in oscillometric index	0-0	0- $\frac{1}{4}$	0- $\frac{1}{2}$
Median oscillometric index	0	0	$\frac{1}{4}$

Table 7: Summary of Oscillometric Indexes Expressing the Arterial Circulation in the Legs in Various Conditions

	Instep	Above Ankle	Below Knee
Running index	$\frac{3}{4}$	3	6 $\frac{1}{2}$
Walking index	$\frac{1}{2}$	2 $\frac{1}{2}$	4
Slow healing ulcer index	Trace	$\frac{1}{4}$	$\frac{1}{2}$
Nonhealing ulcer index	0	$\frac{1}{4}$	$\frac{1}{2}$
Gangrene index	0	0	$\frac{1}{4}$
Nonhealing below-knee amputation stump: $\frac{1}{2}$ at amputation site.			
Well-healing below-knee amputation stump: 1 $\frac{1}{4}$ at amputation site.			

danger of gangrene, and these readings are called the "basic resting circulation" or "gangrene point." Knowing this point and the "walking point," we can estimate how far the patient is able to walk, and even give an opinion about his running capacity. We can suspect the early onset of obstructive arterial disease, follow it, and predict when gangrene is imminent.

Many patients present themselves with nonhealing ulcers. It is important to decide if the nonhealing is due to lack of arterial circulation or if it is on a venous basis or a mixed basis. Four patients with nonhealing ulcers of the toes for three months showed readings of instep "0", above ankle $\frac{1}{4}$, and below knee $\frac{1}{2}$. Five patients with slow-healing ulcers showed instep "trace," above ankle $\frac{1}{4}$, and below knee $\frac{1}{2}$. When these readings are approached, the patient must be extremely careful with his feet. Injuries are dangerous, and the skin must not be cut. Skin grafts will not take if the "slow healing readings" are present at the skin graft site and above.

If amputation has to be performed, it is important to be able to decide at what level it should be done. Three points must be considered: (1) whether healing without weight-bearing is expected; (2) whether healing plus weight bearing is expected, and (3) whether healing, weight bearing, and some margin for future deterioration of the arterial circulation are expected. Four patients with nonhealing below-knee stumps showed

less than $\frac{1}{2}$ point of oscillation at the amputation site. Another 4 patients had healed well and used a prosthesis when there was $1\frac{1}{2}$ point oscillation at the amputation site.

The conclusion is that, with the instrument used, there should be at least $1\frac{1}{2}$ points oscillation at a below-the-knee amputation site for good healing and use of a standard prosthesis.

Allen, Barker, and Hines⁵ have stated, "Simple, practical, and precise methods of aid to the diagnosis of early non-obliterative atherosclerosis of the extremities are desirable but are not available at present." Further development of the method described may well be the answer to this problem. The norms so far worked out, summarized in table 7, have proved themselves invaluable in the quantitative estimation of the arterial supply to the lower extremities, and in the medical and surgical management of obstructive disease of the arteries in the lower extremities.

Summary

Oscillometric tests on patients with reduced walking capacity show a direct relationship between oscillometric indexes and walking capacity. By graphic methods one can arrive at an oscillometric index expressing a certain walking capacity called "basic walking circulation or walking point." In the same way, on patients with marked cyanosis of toes or minimal gangrene of one toe, one can

arrive at an oscillometric index called the "basic resting circulation" or "gangrene point."

Knowledge of these two points permits one to detect early obliterative arterial disease and follow it throughout its course and observe effects of various treatment procedures. By other tests, one can form a nonhealing ulcer index, slow-healing ulcer index, and amputation site index allowing healing, weight bearing with standard prosthesis, and some margin for future deterioration of the arterial circulation. This method of evaluating arterial circulation has proved itself extremely valuable. It has been established for only one type of oscillometer, but can be established for others in a similar manner.

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CANCER IN WOMEN AND MEN

Does sex play a role in cancer? Women are more prone to develop cancer than men but their chances of doing so decline more with age, the publication reveals. If you're a woman, your chances of developing the disease are one in four, declining after the age of 30, and of dying from it, one in seven, declining after the age of 35. If you're a man, your chances are one in five, declining after the age of 50, and of dying from it, one in eight, declining after the age of 55.

Too, the incidence of various types of cancer differs in the sexes. Cancer of the respiratory system occurs almost three times as often in men as in women; however, the incidence of genital cancer in men is less than one half that in women.

Leading sites of cancer in men are the skin, lungs and stomach, in that order. Cancer of the digestive system heads the list in male mortality rates, accounting for approximately 35 per cent of all male cancer deaths; cancer of the respiratory system is second, being responsible for more than 20 per cent; and cancer of the genital tract is third, with more than 10 per cent.

In women, commonest sites of cancer are the breast, uterus and skin. These are also responsible, respectively, for the highest percentage of female cancer deaths.

Comparative Strength of Neck Flexor Muscles in Normal and Postpoliomyelitis Children: A Preliminary Study

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● This study was prompted by the questions what is the "normal" strength of a child's neck flexors? — is it possible to develop an objective measure for determining the degree of weakness in the neck flexors of postpoliomyelitis children? A group of 100 children between the ages of 3 and 12 was tested; 47 of this group were "normal" controls and 53 were postpoliomyelitis patients. For the purpose of the test the subjects were divided into three age categories: group A from 3-6 years, group B from 6-9 years, and group C from 9-12 years. By utilizing a fixed supine position and free active motion a base line of performance was obtained. Resistance was then added by means of an adjustable head strap, weight pan, and weights. The preliminary results demonstrated that there is a great variance in neck flexor strength in both postpoliomyelitis and nonpoliomyelitis children. Certain interesting observations were made relative to neck flexor strength within each group, between the two groups, and on the basis of body type.

The value of the accepted manual strength tests for neck flexors of children is questionable. The subjective resistance of the tester and the variations in individual performances, especially in children, point out a need for a re-evaluation of the present manual muscle test procedures. The lack of objectivity in manual muscle testing was apparent to the pioneers in this field. In 1916, Lovett¹ and his co-workers noted: "It became evident at once that some quantitative method of estimating muscular strength was necessary for any accurate study or any conclusions of value to be drawn from such a study." The common practice of assigning a letter grade or percentage in terms of the normal adult is theoretical. Kendall² states that adults who have had nonparalytic poliomyelitis frequently have no more than 60 per cent strength in the neck flexors, but he includes no measurements of strength for the normal adult. Daniels and co-workers³ do state that normal neck flexor strength may be about 19 pounds, but do not take into account differences due to sex, bodily construction, or age. It is especially difficult to appraise children's neck flexor strength due to an apparent wide variation in ability.

Williams⁴ mentions that some testers use the terms "functional" and "nonfunctional" for grading the strength of small children.

This preliminary study has attempted to investigate the following questions: (1) What is the "normal" strength of a child's neck flexors? (2) Is it possible to develop an objective measure for determining the degree of weakness in the neck flexors of postpoliomyelitis children?

Method

A group of 100 children between the ages of 3 and 12 was tested. Of this group, 47 were normal controls and 53 were postpoliomyelitis patients. For the purpose of the test the subjects were divided into three age categories: group A, from 3-6 years, group B, from 6-9 years, and group C, from 9-12 years. In addition a group of 10 normal adults was tested.

By utilizing a supine position with the head in hyperextension over the end of a treatment table, and the thorax stabilized with an adjustable strap, the subject was instructed to raise the head through full active range of motion up to 10 times. If the subject could perform this test 10 times, resistance was added by means of an adjustable head strap, weight pan, and 1¼-pound iron plates (fig. 1). Five to 10 repetition maximum was determined by trial and each increase was by 1¼-pound increments (figs. 2 and 3).

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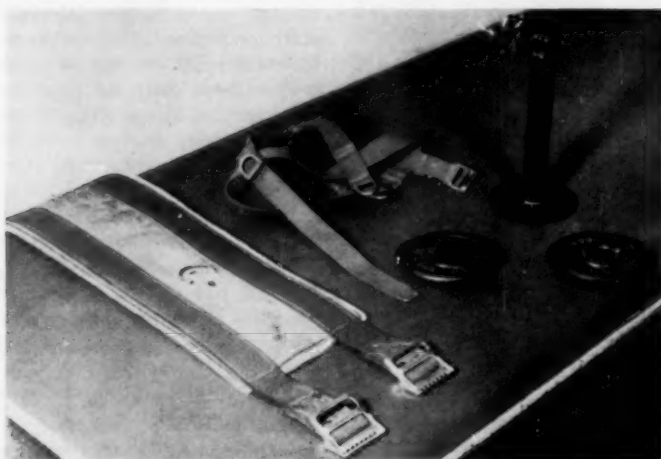


Fig. 1 — Test equipment: adjustable head strap, weight pan, 1 1/4 lb. weights, and stabilizing strap.



Fig. 2 — Neck flexion test (start).

Results

Six normal children in age group A, and one 6-year-old, were unable to complete full range of neck flexion for five repetitions, but were able to perform at least one repetition. However, six normal children in age group A were able to perform the test from 5 to 10 repetitions with $1\frac{1}{4}$ pounds of external resistance. Normal children in age groups B and C varied from 6 repetitions without external resistance, to 6 repetitions with $3\frac{3}{4}$ pounds of external resistance. There was no significant difference between the results of the boys and girls tested.

In the group of 5 normal women and 5 normal men there was a marked difference between the female and the male performances. The men varied from using $12\frac{1}{2}$ to $17\frac{1}{2}$ pounds for 10 repetitions; the women varied from $2\frac{1}{2}$ pounds for 5 repetitions to $3\frac{3}{4}$ pounds for 8 repetitions.

The postpoliomyelitis children varied from the minimum recorded figure of using only the resistance of the head for

5 repetitions to a maximum of 5 pounds external resistance for 10 repetitions. In the age group A, tests of both normal and postpoliomyelitis children showed little difference. In age group B the best performances were by postpoliomyelitis children, and in age group C this difference was more marked.

Case Histories

It was observed in the eight strongest subjects, all postpoliomyelitis patients, that all but one had apparent initial weakness in the neck flexors as recorded by the examining physician or physical therapist. It was also observed that all eight of these subjects were of stocky proportions.

Case 1. An 11-year-old boy was stricken with poliomyelitis in October, 1953. The referral letter from the initial examining physician did not include a muscle strength evaluation. In June, 1955, a physiatrist noted slight residual weakness in the anterior neck muscles. When the test was conducted in August,



Fig. 3 — Neck flexion test (finish).

1955, the patient could lift 5 pounds for 10 repetitions.

Case 2. A 10-year-old boy, with poliomyelitis onset August, 1952, initially had slight spasm of the posterior part of the neck with moderate weakness of the left side anteriorly. The patient was started on a program of neuromuscular re-education, 20 minutes, five times a week, with the emphasis on neck flexors, left hip, knee, foot, and the upper part of the back. In a neck flexor test given in December, 1956, the patient was able to lift $3\frac{3}{4}$ pounds nine times.

Case 3. An 11-year-old boy contracted poliomyelitis on August 3, 1951. The initial referral letter from the primary hospital noted moderate to marked tightness of the posterior part of the neck with severe paralysis of both lower extremities and involvement of the neck flexors and abdominals. The physical therapist's manual muscle exam was marked poor minus. Two months later a grade of good was recorded. The patient's neck flexors were tested in June, 1956, when the patient lifted 5 pounds six times.

Case 4. An 11-year-old girl lifted $3\frac{3}{4}$ pounds ten repetitions two months following the onset of her illness. The initial manual muscle exam showed moderate weakness of the anterior part of the neck and moderate spasm of the neck extensors.

Case 5. An 8-year-old girl tested $2\frac{1}{2}$ years following onset of poliomyelitis was capable of lifting $3\frac{3}{4}$ pounds nine times. A muscle test given 14 months prior to the neck flexor test showed neck flexors with a grade of fair plus.

Case 6. A 10-year-old boy, with onset of poliomyelitis in September, 1955, was given the test in November, 1955; he lifted $3\frac{3}{4}$ pounds ten times. Initially the doctor noted marked tightness of the posterior part of the neck but no weakness of the anterior portion. One month later the doctor noted some weakness of the anterior portion of the neck and abdominals.

Case 7. An 11-year-old girl, with onset of poliomyelitis 10 years prior to the administration of the neck flexor test, lifted $3\frac{3}{4}$ pounds through full range of motion for ten repetitions. No muscle

exam was available for the first year, but subsequent manual muscle tests indicated "normal" strength of neck flexors.

Case 8. An 11-year-old boy had onset of poliomyelitis two months prior to the neck flexor test. The subject was capable of lifting $3\frac{3}{4}$ pounds 10 times. The initial muscle examination showed moderate weakness of the anterior part of the neck with spasm of the neck extensors.

Discussion

The results of this study demonstrate the following interesting points. With normal children between the ages of 3 and 12 it does not appear feasible to determine a normal age-group muscle grade for the neck flexors. Unless factors of full cooperation — especially for ages under 6 — body type, and exposure to exercise are taken into account, the use of the term "normal neck flexor strength" is irrelevant. Because eight normal girls equaled or bettered the performances of normal women, the practice of comparing children's neck flexor strength with the "normal" adult is nullified.

Exposure to exercise was the apparent reason for the better performances of the older postpoliomyelitis children. No normal child tested equaled the results of the eight postpoliomyelitis patients listed above.

Collectively these cases show the inadvisability of assigning a specific muscle grade during the initial stages of the disease when spasm masks the true strength. Incomplete range of motion and lack of thorax stabilization will also influence a proper evaluation.

To the normal child the neck flexor test is a new and unusual experience in which a maximum effort is difficult to obtain. This was especially true when a one-repetition maximum was tried. It was found that a better result could be obtained through the use of a ten-repetition trial with correspondingly less external resistance. To the postpoliomyelitis child a test of this type is generally not a new experience and his cooperation and understanding of a

maximum effort is better. Also under treatment he utilizes the neck muscles as reinforcement for specific extremity and trunk exercises as well as many functional activities. These factors may account for the average better performances of the postpoliomyelitis child compared to a normal child of the same age. What accounts for the poor performance of women as compared with the postpoliomyelitis children tested is not clear.

The assisted test for children under 5 is not consistent with the normal trend of development⁵ and the results of this series of tests. All normal children tested were able to complete at least one full range of motion from head and neck hyperextension to complete flexion.

By utilizing graduated external resistance, a more objective evaluation can be made of the complete range of motion of neck flexion,⁶ asymmetry of strength of the right and left sides, and improvement or lack of improvement over a period of time.

Summary

The neck flexors of 100 normal and postpoliomyelitis children were tested in order to determine what is "normal", and to develop a more objective test for

grading strength. This preliminary study indicates that it is difficult to establish a "normal" standard for 3- to 12-year-old children. The use of external resistance can, however, provide a more objective measure of strength than the accepted manual resistance grading method. Further studies appear to be indicated to evaluate body type and neck flexor strength, the influence of general and specific exercise, and the reason for the unexpected disparity between women and young girls.

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Important Announcement —

The next examinations of the American Board of Physical Medicine and Rehabilitation will be held in Philadelphia, Pennsylvania, June 12 and 13, 1959. The final date for filing application is February 15, 1959. Write to the Secretary, Dr. Earl C. Elkins, 200 First Street S. W., Rochester, Minnesota, for application form.

Prevention and Control of Staphylococcus Infections in Hospitals¹ (Bulletin 1)

To: Administrators and Chiefs of Staff in All Hospitals

● In view of the increasing problem of staphylococcal infections in hospitals and the consequent need to call the recommendations in this bulletin to the attention of the field, the Board of Trustees of the American Hospital Association requested this information be printed in "journals of other health organizations."

This bulletin dated May 21, 1958, originally printed and distributed by the American Hospital Association, 18 E. Division St., Chicago 10, Ill., is herewith reprinted at the request of and in cooperation with the American Hospital Association.

Knowledge of Current Situation

1. It is clear that throughout the world, in spite of the enormous success of antibiotics (and, as will be mentioned below, to some extent because of this success) there remains an important problem of infections, a problem of special significance for hospitals. This report is concerned with such infections, particularly those caused by the coagulase-producing strains of staphylococcus aureus hemolyticus. The most obvious examples are impetigo and more severe infections in children, puerperal mastitis in recently delivered women, burn and postoperative wound infections, and pneumonia in debilitated patients. The staphylococcus may also be responsible for osteomyelitis, meningitis, septicemias, empyemas, boils and abscesses, otitis media, paronychia, etc.

Disease-producing staphylococci frequently implant in the nasopharynx without overt disease, thus producing carriers. Indeed, the staphylococcus carrier-rate is a good index of the level of contamination of the environment.

2. Many hospitals have a serious problem with staphylococcus infections, and all hospitals have a potential problem. Information is inadequate as to the incidence of staphylococcus infections which are acquired in

hospitals, but there is evidence that the number of such infections is increasing.

3. There appear to be innumerable strains of staphylococcus capable of producing infections. Many of these staphylococci are susceptible to antibiotics. Some are not. Infections with antibiotic-resistant staphylococci constitute the main difficulty. Hospitals are clearly the reservoir of most antibiotic-resistant strains. Strains from the community at large are predominantly sensitive to antibiotics. The strains carried by patients on admission are less frequently resistant than strains which are acquired in hospitals. Patients who acquire these infections in the hospital are potential spreaders of resistant strains to the community after discharge. One of the major factors in the current situation is the widespread use of antibiotics which eliminates susceptible strains of staphylococcus and leaves uncontrolled the resistant strains.²
4. Certain factors frequently found in hospitalization appear to make patients more likely to acquire such staphylococcus infections: a) routine indiscriminate use of antibiotics, especially for "prophylaxis"; b) long hospital stay; c) contact, direct and indirect, with infected hospital patients, staff members or personnel; d) crowding and inadequacy of facilities; e) prolonged operative procedures; f) prolonged use of continuous parenteral therapy through venipunctures or indwelling plastic tubing.
5. Certain factors in the host (patient) appear to increase susceptibility to infection: a) treatment with adrenocortical steroids; b) physical debility; c) chronic disease; d) prematurity;

- e) diabetes; f) bed sores; g) open wounds or breaks in the skin; h) chronic pulmonary disease.
6. Danger of infection seems to be especially great from direct exposure to people infected with the staphylococcus, although exposure to the same organisms in or on contaminated equipment, supplies, dressings, air, dust, wall or floor surfaces, linens, etc., may be equally as important. The physician, nurse or other attendant with a boil, paronychia, abscess, or nasopharyngeal infection with a virulent strain is particularly hazardous.

Recommendations

- I. All hospitals should establish Committees on Infections, to devote particular attention to infections which are acquired in hospitals so they may be reduced to the lowest possible minimum.³
- A. It is suggested that the Committee on Infections include, where possible, a bacteriologist, a pediatrician, a surgeon, an internist, a nurse, and a hospital administrator. The local health officer should be urged to serve as a consultant to the committee. The committee should report periodically to the executive committee of the medical staff.
- B. The functions of the Committee on Infections should include at least the following:
1. To establish a system of reporting infections among patients and personnel, such a system being essential to a proper understanding of infections which are acquired in hospitals. The committee should have access to all reports of infections anywhere in the hospital.
 2. To keep records of infections as a basis for the study of their sources and for recommendations regarding remedial measures.
 3. To distinguish to the best of its ability between infections acquired in the hospital and those acquired outside.
 4. To review the hospital's bacteriological services to make sure that such services are of high quality and are accessible either in the hospital itself or in an outside laboratory. Bacteriophage typing, if not available in the hospital, may be sought, as needed, through official local and state health agencies.
 5. To review aseptic techniques employed in operating rooms, delivery rooms, nurseries, and in the treatment of all patients with infections and, if indicated, to recommend methods to improve these techniques and their enforcement.
 6. To make vigorous efforts to reduce to the minimum consistent with adequate patient care:
 - a) Use of antibiotics, especially as "prophylaxis" in clean, elective surgery
 - b) Treatment with adrenocortical steroids
 7. To undertake an educational program to convince medical staff and hospital employees of the importance of reporting to responsible authorities when they have skin infections, boils, acute upper respiratory infections, and the like.
 8. To establish techniques for discovering infections which do not become manifest until after discharge from the hospital, it being known that such infections are often overlooked because they may not be apparent until several weeks after the patient has left the hospital. Two approaches to discovering such infections are suggested:
 - a) An attempt to trace the source of any infection with which a patient may be admitted. For example, if an infant is admitted with staphylococcal pneumonia or a recently delivered mother with mastitis, the hospital where delivery occurred should be determined and informed of the infection so that it can seek possible sources of infection.

- b) Periodic telephone polls on a random sample of discharged patients (particularly recently delivered mothers, newborns, and post-operative patients) to ascertain their state of health and, in case of any indication of infection, to follow them up. Such surveys have proved quite simple and quite valuable. A detailed account of the method is given by Ravenholt and others in the October 1956 issue of the American Journal of Public Health.
- II. Hospital administration should undertake the following measures to assist in the control of infections:
- A. Diligent maintenance of the general cleanliness of *all* areas in the hospital, not simply in those associated with operating rooms, delivery rooms, and nurseries. Other possible sources, such as dust, air pollution (special attention should be given to ventilating and air-conditioning systems and their filters), and floors must also be considered as potentially important factors in the spread of infection. There should be regular inspections of the hospital for general cleanliness.
- B. Special studies among staff and personnel to uncover silent carriers of staphylococcus, especially in epidemic situations accompanied by repeated cases traceable to the same organism.
- C. Appropriate measures for the treatment of all carriers who persistently show heavy growth of epidemic strains of staphylococcus in nasopharyngeal cultures or who are identified by epidemiological evidence.
- D. Transfer of such carriers and personnel with skin infections, boils, acute upper respiratory infections, and the like from locations such as operating rooms, delivery rooms, food-handling positions, and nurseries to other duty stations in the hospital. Usually such transfers have proved to be sufficient to control the problem, but occasionally leave of absence for a persistent carrier has been necessary.
- III. Hospitals should initiate or participate in community programs to control infection through cooperation with other hospitals, local medical societies, local health departments, and other groups.

General Comment

1. Occasionally, an entire hospital, a whole community, or a large area seems to become subject to an epidemic strain of staphylococcus. Why this occurs is not known. Its occurrence, however, points up the need for more general recognition and study of staphylococcus infections.
2. Among the agencies from which consultation and assistance concerning infection problems may be sought are the following:
 - a) The American Hospital Association, the American College of Surgeons, and the American Academy of Pediatrics (especially for newborn infants) which will furnish upon request the names of suitable consultants.
 - b) Local and state health departments which, in many instances, have experts on their staffs.
 - c) The Communicable Disease Center of the U. S. Public Health Service, Atlanta, Georgia, whose assistance may be obtained through local and state health departments.
3. Valuable background information and discussion about the infection problem can be found in:
 - a) Conference on staphylococcal infections. (Symposium) Journal of the American Medical Association. 166: 1177-1203, March 8, 1958; (Editorial p. 1205)
 - b) Observations relative to the nature and control of epidemic staphylococcal disease. F. H. Wentworth and others. American Journal of Public Health. 48: 287-98, March 1958

- c) New York (State) Department of Health Guide for the prevention and control of infections in hospitals. Albany; 56p. illust. 1957
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Edwin L. Crosby, M.D.
Director

This bulletin was prepared by the Council on Professional Practice's Committee on Infections

Within Hospitals consisting of: Dean A. Clark, M.D., chairman; William A. Altemeier, M.D.; C. F. Cardwell, Jr.; James P. Dixon, Jr., M.D.; Maxwell Finland, M.D.; Horace L. Hodes, M.D.; Martha Johnson, R.N., and Alexander D. Langmuir, M.D., in consultation with Kenneth B. Babcock, M.D., of the Joint Commission on Accreditation of Hospitals; William H. Stewart, M.D., of the Public Health Service; and others.

1. The Committee on Infections Within Hospitals is charged with the responsibility of recommending American Hospital Association policies and programs in the prevention and control of all infections within hospitals. Because of the general interest in the problem, this bulletin is devoted to the staphylococcus. Two earlier bulletins on Asian Influenza have been distributed.
2. It is not known whether resistant strains of this organism actually acquire resistance after exposure to the antibiotics, or are resistant to begin with and are simply unmasked by the suppression of susceptible strains — although the latter is thought to be the case. From a practical point of view it does not matter which theory is correct.
3. The Joint Commission on Accreditation of Hospitals is being asked to consider the establishment of a Committee on Infections as a major factor in the accreditation of a hospital. Bulletin 17 of the Joint Commission contains recommendations on the subject.

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Pressure Gauge Device as an Aid in Treating Hip Contractures Following Above-Knee Amputation

Theodore F. Childs, M.A., R.P.T.
Brooklyn
and
Milton Holtzman, M.D.
New York City

● A method of facilitating flexor relaxation during active extension of the hip is described. Adequate range of motion improves function with a prosthesis. Flexion-abduction contractures decrease range of motion when they occur in above-knee amputees. Flexion contracture can be prevented or stretched by active extension and simultaneous relaxation of the flexors. Abduction contractures automatically improve with improvement of flexion contracture.

An adequate range of joint motion leads to better function in using a prosthesis. A major obstacle to the use of a prosthesis in the above-knee amputee is the restricted range of a flexion-abduction contracture. The usual method of conservative treatment of this contracture has been active exercise and/or stretching either manually or with the use of weights. Active exercise of the extensors without manual stretching but with simultaneous relaxation of the flexors is capable of stretching the contracture. The abduction portion of the contracture is usually relieved coincidentally with the reduction of the flexion portion of the contracture.

The main concern is with true contracture (muscle and fibrous tissue shortening) and not with spasm. Muscle spasm or persistent physiologic shortening is usually accompanied by pain which may interfere with muscle function. This is often present immediately following surgery. At this stage the use of relaxation technics in conjunction with symptomatic drugs may be sufficient. If not relieved quickly it will lead to muscle and fibrous tissue shortening or true contracture.

Contracture is most marked in the older age group because of the longer healing period following surgery. It occurs especially in short stumps unless proper postoperative bed posture is conscientiously maintained. Contractures occur because the adductors (adductor

magnus, adductor longus and gracilis) are severed during the amputation as are the hip extensors (semitendinosus, semimembranosus and the long head of the biceps femoris). The hip flexors (psoas major and iliacus) and the abductors (gluteus medius and gluteus minimus) are left intact. The resultant imbalance of muscle pull is toward flexion and abduction. In the immediate postoperative period, because of the desire for rapid healing and because of pain, bed positioning of the patient is usually in the direction of this muscle imbalance. The stump is elevated on pillows and the hips flexed by the use of a back rest. When the patient is sitting in a chair, the thigh is always flexed; when he is walking with crutches, it is usually held in slight flexion rather than hanging free in the anatomical position. These conditions place one of the main hip extensors (gluteus maximus) on stretch; since this muscle is infrequently actively contracted, weakness and atrophy result.

Extension of the hip must exert force against the posterior wall of the bucket of the prosthesis in the stance phase of ambulation if stability is to be maintained. This indicates the need for a good range of motion. A prosthesis can be made to compensate for a flexion contracture to a limited degree, but it can hardly substitute for a good range of motion.

Methods to reduce hip flexion contracture have been a subject of controversy. Experience has indicated that the commonly used passive stretching should

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be discontinued because of the pain it may cause. This may result in increase rather than diminution of the contracture. Weights placed on the anterior surface of the stump, to force hip flexors to stretch, stimulate proprioceptive impulses and this in turn causes the muscle to hold these weights rather than to relax. It is logical that conscious relaxation of the hip flexors should be encouraged while the extensors are being actively contracted. This will aid in strengthening hip extension and in stretching hip flexors. This will also assist the patients in developing those movements which will have a carry-over value to the prosthesis.

This method is not without its problem. In stretching, the patient might extend his lumbar spine in lordosis thus inclining his pelvis to substitute for true hip extension. Close supervision is required to prevent this. A pressure gauge has been improvised to assist in this method of reducing flexion contracture. Its principle is that it serves as a dynamic method by which the patient is made aware of unwanted tension in the hip flexors while attempting active extension. Proper positioning of the patient, stabilization of the pelvis, and the necessity for being conscious of relaxation while the right muscles are being stretched are encouraged with this technic.

The instrument is made from the bladder and gauge of any ordinary aneroid sphygmomanometer. The details are shown in figure 3. The patient is supine with the contralateral knee flexed on the chest. This flattens the lumbar spine and fixes the pelvis. A patient with hip flexion contracture would be unable to keep the stump on the plinth. A strap is placed over the stump and anchored to the plinth. The strap is not tightened sufficiently to force extension. The inflated bladder connected to the pressure gauge is then placed between the strap and the anterior surface of the stump. The patient, by observing the gauge, has a means to determine whether he is flexing his stump. Any increase in flexion will cause a corresponding increase of pressure. As the patient pulls the contralateral limb toward his chest,



Fig. 1 — Side view of patient utilizing pressure gauge. Note flexion of cervical spine and flattening of lumbar spine. The inflated bladder is between strap and patient's stump. The gauge is so placed that it can be seen by both the patient and the therapist.



Fig. 2 — A view of the pressure gauge as the patient sees it. In order for the patient to view the gauge at all times, he must of necessity flex his cervical spine.



Fig. 3 — The equipment necessary to make use of pressure gauge. The bladder and gauge from any ordinary aneroid sphygmomanometer are used. A 1 1/4 inch square block of wood 2 1/2 feet long through which a hole has been drilled at the top is used to permit gauge to be placed at the top, with a hole at the side for passage of rubber tubing of sphygmomanometer.

he must extend his stump or observe an unwanted increase in pressure in the gauge because of increased stump flexion. Awareness of muscle relaxation as distinguished from muscle stretching must not be assumed to be an innate capacity possessed by all patients. Some time must be spent by the therapist in demonstrations, in muscle re-education, and in practice with the patient.

Summary

Adequate range of motion improves

function with a prosthesis. Flexion-abduction contractures decrease range of motion when they occur in above-knee amputees. Flexion contracture can be prevented or stretched by active extension and simultaneous relaxation of the flexors. Abduction contractures automatically improve with improvement of flexion contracture. A method of facilitating flexor relaxation during active extension of the hip is described.

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"L'Etoile du Nord"...

portrait of minnesota. i

8 Goths and 22 Norwegians on exploration-journey from Vinland over the West We had our camp by 2 skerries one days journey north from this stone we Were and fished one day After we came home found 10 men red with blood and dead Ave Maria Save us from Evil . . . Have 10 of our party by the sea to look after our ships 14 days journey from this inland Year 1362

— KENSINGTON RUNESTONE FOUND IN MINNESOTA

Dense green forests, forever shrouding antiquity and the mystic story of the Kensington Runestone, are reflected in the waters of a state which underestimates itself in claiming to be the "Land of 10,000 Lakes." Minnesota contains 11,007 lakes within its boundaries—each covering at least 25 acres. These have been a major attraction in spotting Minnesota as a target for sportsmen and vacationers. Sailing, boating, water skiing and swimming are very popular and even novice fishermen seem to have luck in landing trout, northern pike, muskellunge, bass and sunfish.

Surrounding the lakes are forests well-known as hunting country. In the fall hunters go out after duck, deer, partridge and pheasant. Paths cut through the hilly, forested areas serve as ski trails during the winter months.

Some of the numerous resort areas within the state include Minnesota's two national forests, the Chippewa and Superior; the Arrowhead region in the northeast and the areas around Detroit Lakes, Alexandria, Brainerd, Bemidji and Park Rapids.

Approximately two-thirds of the state's area is level prairie. In the north is the highland district, which attains an average elevation of 1,750 feet and slopes off in all directions, forming the watershed for the three great river systems which originate in Minnesota: the Mississippi, the Red River of the North and the St. Lawrence. Dense forests of evergreens once covered this region extending south nearly to the twin cities of St. Paul and Minneapolis, and still cover a large part

of the state's sparsely settled northern portion.

The Northwest Angle, a wilderness area belonging to Minnesota, is the northernmost territory of the United States. It is separated from the rest of the state by Lake of the Woods water and physically connected to Manitoba and Ontario, Canada. No roads lead into the Angle, which must be reached by boat or plane; and in winter, dog sled.

Probably the first white men to visit what is now Minnesota were Radisson and Groseilliers, French explorers, in 1660. Eighteen years later Daniel de Greysolon, Sieur Du Luth, built a fort on the shore of Lake Superior, and in 1680 Father Hennepin discovered the falls of St. Anthony, a 50-foot leap in the Mississippi River where Minneapolis now stands. By the nineteenth century, trading posts had been established on the Minnesota River and on Lake Pepin.

The territory, ceded to the English by the French in 1763, became a possession of the newly formed United States in 1784. No special effort was made to establish settlements until 1805 when the government secured tracts of land from the Indians to use as military posts. The first expedition to discover the source of the Mississippi started out from St. Louis that same year under the leadership of Lt. Zebulon M. Pike. Other explorers followed him and pursued the headwaters of the great river further. Henry R. Schoolcraft is credited with finding the source at Lake Itasca in 1832.

By 1838 the Indian titles to the lands east of the Mississippi had been extinguished, and in 1849 the Territory of

Minnesota was organized, with St. Paul as the capital. In 1858 Minnesota's boundaries were fixed and the state was thereupon admitted to the Union.

Over half the land area of Minnesota is devoted to farming. The Red River Valley, in the northwest, is one of the most fertile wheat areas in the world. Some prominent industries of the state are based on agriculture—meat-packing, canning, cheese and butter-making and flour milling. Headquarters of the country's three largest flour firms are in Minneapolis.

Today more money is earned in Minnesota from manufacturing than farming, and industrial plants are a common sight in the small communities, as well as the three largest cities: Minneapolis, St. Paul and Duluth. Leading manufactured products include plastics, paper, pottery, wearing apparel, skis, farm equipment, electrical control apparatus and heavy industrial machinery.

From iron ranges in the northeastern section of the state come seventy per cent of the nation's iron ore supply. About one-third of Minnesota's area is classed as forest land. Lumbering, the great industry of early days, reached its peak during the first part of the century. Forest industries have remained economically important in the state because of the utilization of so-called "weed trees" in manufacturing paper and pulp products.

The history and development of the people of the "North Star Country" into the nation's eighteenth ranking state in population and eleventh ranking state in area, is only part of a story yet to be told.

First of a series of articles about the City of Minneapolis and the State of Minnesota — meeting site of the 1959 (37th annual) session of the American Congress of Physical Medicine and Rehabilitation. This material is compiled and prepared for publication by Dorothea C. Augustin.

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abstracts

Influence of Denervated Muscles on Exostoses of Rats Fed a Sweet Pea Diet. C. J. Hamre, and B. L. Yaeger. *A.M.A. Arch. Path.* 65:215 (Feb.) 1958.

It has been previously demonstrated that rats fed a sweet pea diet will develop exostoses at the point of muscle attachment to the skeleton and that transection of the muscles will prevent exostoses from forming. To confirm these statements, a study was made of the pattern of exostoses and methods of altering the pattern, the authors transected the nerve supplying the adductor longus muscles, the obturator nerves, the femoral nerve, and the nerves of the lumbar plexus on one side of the lower extremity in 35 adult female rats, using the opposite extremity as a control. Illustrated by excellent photographs, the authors showed by the absence of exostoses in the muscles supplied by the above mentioned denervated nerves, the compensatory increase in size of commonly occurring exostoses or the formation of new exostoses where other muscles or groups of muscles were taking over the function of their neighboring denervated ones.

Red Shoes: A Case Study. F. A. Hellebrandt; C. Etta Walters, and Harriet Styche. *Phys. Therapy Rev.* 38:104 (Feb.) 1958.

This case report deals with observations on a 39-year-old woman with moderately severe athetoid quadriplegia during a prolonged period of treatment consisting of relaxation, table exercises, gait training in high top, heavy soled, steel shank shoes, and grooming. It was discovered that without proper footwear she assumed a crouching posture, which could be corrected by a scultetis binder or by replacing the foot gear. It was assumed that "proprioceptive feed-back" was responsible for the better posture in the second instance, and for this reason the patient's favorite red sandals were remade with 3½ pounds of lead weight in each sole and a special sole for gripping the floor, following which the patient's gait improved markedly. An "obstacle course" requiring rapid change of direction for use in training athetotic persons is described.

Neuropathy in Rheumatoid Disease. F. Dudley Hort; J. R. Golding, and D. H. Mackenzie. *Ann. Rheumat. Dis.* 16:471 (Dec.) 1957.

Ten cases of peripheral neuropathy in rheumatoid arthritis are described. Of these, five had never received steroids. However, in four others the neuropathy developed within one month of discontinuing such therapy. In two of the four cases neuropathy developed within seven days after withdrawal of steroids. Sensory changes preceded motor changes in all cases. In six, only sensory changes were present. The development of neuropathy did not coincide with exacerbations of the arthritis, was not connected with gold or butazolidin therapy, and led all patients to make fresh complaints. High steroid dosage, vitamins and physical therapy did not appear to affect the neuropathy. Spontaneous improvement or complete recovery occurred in all cases in periods ranging from three days to one year, but signs of neuropathy persisted in all but two cases while in one case there was a relapse after partial recovery. The concept of diffuse arteritis ranging from periarteritis to the severe necrotizing type as part of the pathology in rheumatoid arthritis seems to be the best explanation of the cause of the neuropathy. The work of other authors is cited to corroborate this point of view. Arteritis and periarteritis of the small vessels of the foot was found on autopsy of one of the patients as well as demyelination of the nerves lying in proximity to these vessels. It was felt that abrupt steroid withdrawal may precipitate a neuropathy.

March Gangrene. John P. Blandy, and Robert Fuller. *J. Bone & Joint Surg.* 39-B:679 (Nov.) 1957.

Blandy and Fuller describe three new cases of a syndrome which occurs in young men following physical activity presenting no history of injury, characterized by gradual onset of pain, swelling, tenderness, and inflammation of certain muscles of the leg. Voluntary movement of the foot is lost, and passive movement is painful. Later, the pain, tenderness, swelling, and redness disappear and the muscles feel "woody hard." They distinguish this from similar problems secondary to overt vascular lesions, injury or

other direct cause. Decompression by early and extensive fasciotomy is the treatment recommended, but the authors believe decompression is indicated even late, since no other form of treatment offers any possibility of recovery of muscle function. Because of the necrosis present, great care is necessary to prevent intercurrent infection.

Exercise Therapy. Nancy Salter. *Ann. Phys. Med.* 4:81 (Aug.) 1957.

The various technics of exercise therapy in use for weak muscles are reviewed. All systems agree that the aim is to increase strength, endurance and coordination and that progressive resistance exercises are necessary to accomplish this. The various systems differ in the amount of resistance employed, in the range of muscle motion used, and in the spacing of individual contractions and sessions. The technics employed by DeLorme, Zinovieff, Hellebrandt, MacQueen, Kabat and Guthrie Smith are reviewed. It is implied that all of these systems are effective, and no conclusions are drawn concerning which technic is preferred. Experimental clinical investigations in the relative effectiveness of different routines are reviewed but it is apparent that more work in this area is necessary. It is emphasized that regardless of the routine it is necessary to retain the active cooperation of the patient and to vary the routine as much as possible to prevent boredom.

Electromyography in Herniated Lumbar Disks. Robert A. Mendelsohn, and Anders Sola. *A.M.A. Arch. Neurol. & Psychiat.* 79:142 (Feb.) 1958.

Forty-five patients were studied to evaluate electromyography as a clinical aid in localizing herniated lumbar disks. These patients all also had myelograms and surgically verified protruded disks. Denervation fibrillation, polyphasic motor unit potentials, and positive waves picked up by the monopolar electrode were interpreted as indicating nerve root involvement. Electromyography was 89 per cent accurate in localizing the lesion and the myelogram was 84 per cent accurate. None of the patients inaccurately diagnosed by the myelogram were misdiagnosed by the myogram and vice versa. Objective neurological changes were also reported but not from the point of view of the accuracy of diagnoses by symptoms and signs alone. It is concluded that the electromyogram is a clinically useful aid in particular if a myelogram is not done, or if a myelogram is negative.

The Significance of Changes in Lactic and Pyruvic Acid Blood Levels in Cardiac Decompensation. Z. Antaloczy; M. Bretan, and E. Lovei. *Wien. klin. Wchnschr.* 68:387 (May 8) 1956.

Forty-seven patients with cardiac decompensation were studied for plasma levels of lactic acid (89 determinations) and pyruvic acid (91 times). In 13 patients the pyruvic acid was over 1 mg. per cent; in 11 it was below 0.5 mg. per cent. Lactic acid levels were over 25 mg. per cent in 15 patients; below 15 mg. per cent in 13. Controls, 11 persons who had no metabolic disease, showed pyruvic acid levels of 0.66 ± 0.13 mg. per cent; lactic acid levels of 20 ± 5.38 mg. per cent with daily variations of lactic acid within 4 mg. per cent; pyruvic acid within 0.20 mg. per cent. The authors state that since lactic acid is low in the more severe degrees of decompensation, this can be interpreted as an ominous sign (in 11 patients who died, 7 had lactic acid lower than normal, 2 normal, and 2 above normal). The lactic acid rose with the reestablishment of compensation. Pyruvic acid levels showed similar trends, although one cannot show conclusively a relationship between degree of decompensation and levels of these substances. It is reasoned that since these factors are the ultimate energy source for the myocardium, low levels of themselves must be harmful. The fall shown by their work indicates a "circulus vitiosus," and hence the authors argue that in addition to the use of digitalis and strophanthins, the carbohydrate stores of the patient should be replenished. They state they have had good results in severe decompensation with ACTH, presumably by stimulating glyconeogenesis, and thereby increasing blood glucose levels.

A Brace for Correction of Torsion of the Lower Extremity. S. L. Haas. *J. Bone & Joint Surg.* 40-A:203 (Jan.) 1958.

The author describes a single bar long leg brace with thigh and calf bands which has the unique feature of a tube and rod above the ankle to allow horizontal rotation. By the use of a coil spring attached to the tube above the rod below, the ankle joint and shoe can be forced into rotation with respect to the thigh-knee-calf section. In the illustration of a patient wearing the brace, it would appear that the upper section has rotated around the foot, and it is difficult to see how one would prevent the foot from staying in its deviated position while the brace itself rotates around the leg without undue constriction or pressure from the calf and thigh leather lacers.

The Action of Tetanus Toxin. Edward H. Lambert. Proc. Staff Meet. Mayo Clin. 32:143 (Apr. 3) 1957.

The primary site of action of the tetanus toxin is the central nervous system which is reached by spread of the toxin along nerve trunks. The possibility that it reaches the central nervous system via the circulating blood has not been excluded however. Intramuscular or intraneural injection of 1/50 to 1/200 of the minimal lethal dose in an extremity of cats, rabbits, or monkeys causes in two to four days persistence of voluntary movements, then spasticity with brief convulsive movements, and finally pronounced rigidity. This so-called local tetanus may persist for several weeks or months and recovery may finally occur. Apparently mono-synaptic reflex activity such as the knee jerk is disturbed very little by the toxin. Poly-synaptic reflexes such as the withdrawal reflex are profoundly affected. The abnormalities noted in the withdrawal reflex are exaggerated contraction of the flexor muscles with active contraction rather than relaxation in the extensor muscles. It is postulated that the toxin works by blocking or suppressing action of the interneuron which has synapses with inhibitory action on the motor neuron. Hyperpolarization of the membrane of the lower motor neuron is suppressed while depolarization is not. Whether the toxin works by preventing release of the inhibitory transmitter substance or by preventing the action of this substance is not known.

Morphological and Chemical Connective Tissue Changes in Fibrositic Muscles. P. Brendstrup; K. Jespersen, and G. Asboe-Hansen. Ann. Rheumat. Dis. 16:439 (Dec.) 1957.

The backs of 12 patients under general anesthesia about to be operated upon for herniation of the nucleus pulposus, were palpated for fibrotic areas. When pronounced areas were found in the sacrospinalis muscle on one side and little or no abnormality on the other, biopsy specimens (1.5 to 2.0 gm.) were removed. The specimens were stained with aqueous toluidine blue solution in order to determine the localization and content of acid mucopolysaccharides. Microscopic examination revealed that in nine of the 12 fibrositic specimens a metachromatic substance was found in the interfibrillar connective tissue, indicating acid mucopolysaccharides. In seven specimens, there was widening of the interstitial spaces indicating edema. In six, a relatively increased number of nuclei was found in the muscle. Six specimens revealed an increased number of mast cells and four, slight accumulation of lymphocytes. In one specimen a few polymorphonu-

clear leucocytes were seen. Two were absolutely normal. Of the 12 control specimens none showed pronounced changes. In three, there was metachromatic staining of intercellular connective tissue; in three, an increased number of nuclei; in one, a few perivascular lymphocytes. Eight were perfectly normal. Chemical analysis revealed that the dry substance was 25.9 per cent by weight in the fibrositic muscle and 28 per cent in the control specimens. Potassium concentration was 5 per cent lower in the fibrositic specimens than in the controls while chloride and hexosamine concentrations were 50 per cent higher in the fibrositic group. Water content was 8 per cent higher in the fibrositic group. The authors consider the fibrositic tissue found on palpation to be the result of the interstitial mucinous edema in the connective tissue of the muscle noted on microscopic examination. Clinical analysis corroborates the increase in extracellular space. Mechanical or chemical irritation of the connective tissue supposedly is the cause of the increased hexosamine concentration. This is an interesting paper, especially since heretofore there has been very little chemical or microscopic evidence for differences in fibrositic nodules.

The Direct Approach to Congenital Dislocation of the Hip. E. W. Somerville, and J. C. Scott. J. Bone & Joint Surg. 39-B:623 (Nov.) 1957.

Forty-four consecutive patients, aged 9 months to 5 years (42 girls and 2 boys), representing a total of 50 dislocated hips, were treated by a routine of gradual stretching by abduction splints, open reduction with resection of the limbus of the acetabulum where indicated, osteotomy for correction of anteversion, and mobilization, the total period of treatment being 14 weeks. Followup was 4½ to 7 years. The authors used contrast liquid for "arthrography" at the time of reduction in order to discover if the limbus of the acetabulum represents an obstruction to reduction. If it interfered, in most cases it was excised to prevent it from being pressed into the acetabular cartilage and from deforming the femoral head. The second operative stage is a rotation osteotomy in an attempt to prevent recurrent subluxation. They report no evidence of osteochondritis of the femoral head in this series. No comparison of results with other methods has been made, since early functional results are not meaningful in a problem which may require many years for significant disability to develop even when left untreated. The authors believe that anatomical correction, as evidenced by x-ray, is the best criterion for judging results.

book reviews

The reviews here published have been prepared by competent authorities and do not necessarily represent the opinions of the American Congress of Physical Medicine and Rehabilitation and/or the American Academy of Physical Medicine and Rehabilitation.

MEDICINA FISICA Y REHABILITACION. By *Alfonso Tohen Zamudio, M.D.* Price, \$12.00. Pp. 475, with 516 illustrations. Published by Hospital Infantil, Francisco Mendes Oteo, editor. Obtainable from Sirta Maria Ester Rodriguez Hospital Infantil, Mexico 7, D. F.

This well-organized book written in Spanish is divided into seven sections as follows: Light, Heat, Electricity, Sound, Water, Kinesiotherapy and Rehabilitation. The section on kinesiotherapy is further divided into Kinesiology, Massage, Manipulation, Muscular Examination, Muscular Re-education, Posture, Postural Defects, Postural Exercises and Occupational Therapy. This is a sound, well-documented and well-balanced volume which, it is predicted, will become the standard textbook in the field among Spanish-speaking people. It is to be hoped that it will be widely distributed not only in Mexico, but also in Spain and South America.

Doctor Tohen and his collaborator, Dr. Guillermo, are to be congratulated on having produced a monumental contribution which should do much toward the advancement of physical medicine and rehabilitation. (*Frank H. Krusen, M.D.*)

NERVES EXPLAINED. A Straightforward Guide to Nervous Illnesses. By *Richard Asher, M.D.* Cloth. Price, \$2.75. Pp. 153. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1958.

One more in the long list of books that has been written to help people overcome mental disease, this book has many good features to justify it. It explains at the outset that the word "nerves" is being used in the popular sense of mental disease and not in the strict anatomical sense. It pays due attention to the mental symptoms that often follow injury to the brain by physical trauma, asphyxia, poisons, and infections. Thereafter it proceeds to a systematic discussion of the two major types of mental disturbance, the psychoses and the neuroses. Unfortunately the author uses "nervous upset" as the synonym for neurosis and "nervous breakdown" for psychosis; many

an American reader who has been told he had a "nervous breakdown" will be alarmed to read on page 20 that he had a type of "insanity, lunacy or madness." The author states (page 20) that that is how most laymen use the phrase; presumably this applies only to his own country. The ensuing descriptions of the various types of mental disturbance are systematic, interesting, and objective.

The last section of the book applies the foregoing to special problems of childhood, old age, addictions, the sex life, hypnosis, insomnia, and valetudinarianism. The chapter on sex deserves praise for coming closer than most popular presentations to putting autoerotic and homosexual activities in their proper places as behavior patterns that are normal in some situations, at least in the sense of being statistically predictable and having been accepted. The chapter on hypnosis sets out with the illogical statement that "Hypnosis uses the power of suggestion to produce a state of exaggerated suggestibility in which suggestions are more easily accepted . . ." and thereafter goes round and round in circles like many other contemporary discussions of the subject. The book lacks a bibliography but does have an index.

A work of this sort cannot please everyone. Readers who pay due attention to the author's modest and temperate introduction will find the book an earnest attempt to be instructive, helpful, and humane. (*F. T. J., M.D.*)

PHYSICAL METHODS IN PHYSIOLOGY. By *W. T. Cotton, M.Sc.* Cloth. Price, \$10.00. Pp. 375, with illustrations. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1957.

This small volume has two desirable features which are not apparent from the title and format: first, its size is misleading; it is crowded with a much greater wealth of material than usual in a small handbook; second, it is much more than a volume on methodology. Many of the subjects are discussed thoroughly and fundamentally, using physical methods as illustrative material. In spite of its broad scope, a single small volume could not, of course, cover all important de-

velopments. The author has obviously dealt most extensively with subjects from his own experience. The chapter on the physics of the circulation is the most thorough of all. That on respiration includes a lucid discussion on the difficult subject of diffusion measurements but omits measurements of ventilation by analysis of inert gases such as nitrogen. The chapter on muscle will disappoint the electrophysiologist, although it contains a thorough review of heat measurements. The final chapter on electronics in physiology is a useful orientation for the beginning laboratory worker.

The volume as a whole is designed for the worker in laboratory research. Its value to the clinician is to enlarge his concepts of physiologic principles and methodology. Its rather extensive bibliography makes it useful as a start toward a more thorough reading on the various subjects presented. (*R. C. D., M.D.*)

SYNCHRONIZED SWIMMING. By *Fern Yates and Theresa W. Anderson*. Second edition. Cloth. Price, \$4.50. Pp. 164, with 372 illustrations. The Ronald Press Company, 15 E. 26th St., New York 10, 1958.

Swimming is synchronized "when two or more swimmers coordinate their movements to each other, or when one or more persons time swimming to a musical accompaniment."

This book is a complete textbook giving concise information about every phase of this form of swimming. Rhythm, basic water skills and creativeness are gone into in detail. The authors discuss rhythm, basic music patterns and show how synchronized swimming can be introduced into regular swimming classes, even for beginning swimmers.

Since the skills and stunts — of which there are 87, are clearly defined, standardized and named for competitive use, there is continued stimulation in becoming more and more proficient in group and solo work in this field. The synchronization of each standard swimming stroke is described, with photographs of each sequence. Every stunt is similarly pictured. There are over 300 underwater and surface photographs. There are innumerable diagrams of the use of these various skills in group work, showing various basic patterns.

Water compositions considering music and choreography, staging including musical effects, other sound effects, lighting, costuming and skits are discussed. One chapter details the planning of a beginners program and an advance program. Another outlines a one-day clinic.

Finally, since synchronized swimming is an official part of competitive swimming in the United States and in the Olympic games, there is a comprehensive discussion of rules,

routines, planning a meet, judging a meet, with official point requirements listed and samples of routine sheets and the Judges' grading sheet.

Rhythm usually adds more pleasure and recreation in any activity. Since swimming is such an excellent overall form of exercise and since it is of great benefit to physically handicapped persons, it is well to know that the addition of synchronization in swimming programs is being used more and more, and that such a complete, concise and well-organized textbook is available for reference. (*Nila Kirkpatrick Covalt, M.D.*)

THE PRINCIPLES OF EXERCISE THERAPY. By *M. Dena Gardiner, F.C.S.P.* Cloth. Price, \$4.00. Pp. 295, with illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1957.

This manual on exercise therapy is divided into 17 chapters. It contains many helpful stick diagrams and also an appendix on derived positions, a glossary on terminology, a brief bibliography and index. The author utilizes an amplified outline style of writing which perhaps facilitates didactic study through the use of varied types of headings, subparagraphs in italics, numeration, and the like.

One chapter by Monica Martin Jones on proprioceptive facilitation technics is certainly capably presented but illustrates as well as anything can, the difficulty encountered in presenting this complex concept on a two dimensional grid.

The book is competently written by a first rate teacher. The bibliography however is skimpy and suffers from omission of the names of publishers of the various texts cited and might well have included more significant single papers rather than being entirely devoted to textbooks. Textbooks, in general, are too diffuse and too general to be good references. The index also could well be amplified.

In summary, this is a workman-like book, useful for the student of physical therapy and occupational therapy. Its price is appealingly modest for the quality of the work. It should at least be on the shelf as a reference work in every school of physical therapy and occupational therapy. (*Sedgwick Mead, M.D.*)

APPLIED MUSCLE ACTION AND COORDINATION. By *Kathleen I. McMurrich*. Cloth. Price, \$3.75. Pp. 92. University of Toronto Press, Toronto 5, Ont., 1957.

This concise, well-written monograph provides in book form the basic knowledge of muscle action for students of functional anatomy. Previously this was taught to students of physical and occupational therapy by

means of simple line drawings in a notebook commonly seen in schools of physical and occupational therapy. The author introduces her subject by a review of historical interest in muscles, muscle action and muscle physiology; this is followed by detailed description of muscle action and function for body segments, i.e., the extremities and the trunk. Practical application may be found from a list of suitable crafts to be employed for muscle exercise and re-education. Especially adapted apparatus which can be employed for specific purposes is also described. Line drawings illustrate specific points of interest and a nicely reproduced series of photographs of typical peripheral nerve lesions add to the interest and value of the book.

This monograph will be found particularly helpful in the teaching of functional anatomy to students in such clinical requirements as muscle testing and when devising occupational therapy treatment routines for applying resistance exercises. It will be a valuable addition to any student library and in hospital clinics where physical and occupational therapy are administered. (*J. H. K., M.D.*)

WIEDERHERSTELLUNGSSCHIRURGIE UND TRAUMATOLOGIE. Reconstruction Surgery and Traumatology. By *Max Lange*. Volume IV. Cloth. Price, \$13.75. Pp. 222, with 201 illustrations. S. Karger, Basel, Switzerland; Albert J. Phiebig, PO Box 352, White Plains, N. Y., 1957.

The first of this series of annuals appeared in 1953 and was well received. The present excellent volume follows the same multilingual pattern; of the 10 chapters, seven are in German, two in English, and one in French, but each chapter is followed by a summary in each of the three languages and a bibliography of truly international scope. The individual chapters are commendable also for their factual approach, wealth of technical information, and fine illustrations. The first three deal with the pathogenesis and treatment of recurrent dislocation of the shoulder. There follow two chapters on traumatic dislocations of the hip; one discusses the problem of necrosis of the caput femoris, the other the end-results of treatment in 31 cases. The last five chapters are on the knee and patella; they include one on the results of 55 operations on various ligaments of the knee and another on the course of 1,211 patients with tears of the medial (1,141 cases) and lateral (70 cases) ligaments. The bibliographies are representative of world literature and have evidently been prepared with unusual care; not a misprint is to be found, despite the multiplicity of languages. The editorial board included experts from each of the five continents, a fact that not only deserves comment as an example of international cooperation but also increases the confidence of the

reader in the results. The book will be valuable to orthopedic surgeons everywhere both as a technical guide to treatment and as a key to other publications on trauma to the shoulder, knee, and hip. (*Frederic T. Jung, M.D.*)

THE INFANTILE CEREBRAL PALSIES. By *Eirene Collis, M.D.; W. R. F. Collis, M.D.; William Dunham, M.D.; L. T. Hilliard, M.D., and David Lawson, M.D.* Cloth. Price, \$3.00. Pp. 100. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

Upon reading this text, one gains the impression that certainly a cerebral palsied child and his parents would be made comfortable by the understanding person who is the senior author of this work. There is no system of treatment extolled, nor elaborate diagnostic methods described. The fundamental neuro-physiologic principles laid down by Little are re-emphasized, and the importance of assessment of the child's capabilities is stressed. Individualized programs of management are cited; these are built around activities which allow for success. The importance of the mother as the best "natural trainer" is stressed.

The book is written in a most readable style; it should be a widely used reference volume and should be read by anyone concerned in the management of cerebral palsied. (*Harriet E. Gillette, M.D.*)

THE HANDICAPPED AND THEIR REHABILITATION. Edited by *Harry A. Pattison, M.D.* Cloth. Price, \$14.75. Pp. 944. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

This treatise has been written by forty-four eminent authors representing disciplines encompassing the modern concept of Rehabilitation. In addition to serving as a source book of information, it may be considered as a unifying matrix for "rehabilitation team" members. An effective presentation is made of the roles of social service, physical therapy, corrective therapy, occupational and manual arts therapy in the restoration of the physically handicapped, particularly in terms of employment. Other specific team member functions are also detailed. In addition, many disabilities as heart disease, cancer, the mentally impaired, etc. are discussed and related to their vocational aspects with more than 100 pages being devoted to the place of labor and industry in rehabilitation.

This book will help arouse the interest, not only of medical practitioners, but of all who are concerned with the man, the patient, and the citizen. (*Herbert Kent, M.D.*)

BIOENERGETICS. By *A. Szent-Gyorgyi*. Cloth. Price, \$4.50. Pp. 146, with illustrations. Academic Press, Inc., 111 Fifth Ave., New York 3, 1957.

Of the series of books in which Albert Szent-Gyorgyi has related his efforts to understand life processes, *Bioenergetics* is a continuation, and probably the most philosophical of the group. In it, he attempts to bring together some facts which may be of assistance in generating understanding in a most difficult and basic area of biology — that of discovering "how does energy drive life?"

In the past decade, much has been learned about the transfer of energy between molecules. There is now, also, much detailed information concerning the structure of macromolecules, but the intriguing question of "why nature has put those atoms together in that highly specific way" remains unanswered. In the field of inquiry relating to the conversion of the energy of a chemical bond to a transferable form that can do work in a living organism, however, our ignorance is even more abysmal.

Having stated the problem briefly but concisely, Szent-Gyorgyi devotes several chapters discussing excitation resulting in fluorescence and phosphorescence. These phenomena demonstrate a transformation of energy and in some cases a delayed transfer which, of course, could be comparable to the important and unknown mechanism about which he is seeking information. These experiments are only suggestive; yet they do bring out a very stimulating discussion.

To the non-experimentalist this may sound, at first, like difficult and uninteresting reading. This is, however, not the case. The book is written in terms understandable even to those unfamiliar with the intricacies of such things as "high energy bonds." It is written mainly to stimulate thought and investigation in areas where Szent-Gyorgyi has pointed the way. (*F. M. B.*)

THE PRINCIPLES AND PRACTICE OF DIATHERMY. By *Bryan O. Scott*, D. Phys. Med. Cloth. Price, \$5.00. Pp. 193, with illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

Dr. Scott has condensed a vast and valuable store of knowledge into a small volume. The history of diathermy is presented in a concise chronological order. Progress in apparatus and technic is evident as the text unfolds. Methods of application of shortwave diathermy are well illustrated and clearly described, together with indications for the treatment and the precautions which must be observed. Despite collateral advances in pharmacological and biological fields shortwave diathermy is still of great value. A clear understanding of the subject such as

afforded by this book will be of outstanding assistance to the practitioner who would avail himself of the technic of shortwave diathermy. (*H. J. Behrend, M.D.*)

PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION. By *George T. Stafford*, Ph.D., and *Ellen Davis Kelly*, Ph.D. Third edition. Linen. Price, \$5.00. Pp. 395, with illustrations. The Ronald Press Co., 15 E. 26th St., New York 10, 1958.

This book is written for those most concerned with physical education in the schools and colleges of today. The material is organized as a college textbook commencing with the importance of physical fitness and the physical rehabilitation team. The subject of Physical Medicine is introduced in the second chapter followed by a discussion of muscles, joints and body somatotypes. The latter sections of the book are concerned with the abnormalities resulting from disease: poliomyelitis, cerebral palsy, arthritis, etc. followed by brief therapeutic exercise procedures in management. The final chapter will materially assist teachers, particularly those in special education to formulate a satisfactory program of physical education for their students.

It is evident that the authors have worked closely with physicians in Physical Medicine and Rehabilitation and have a sincere interest in corrective as well as physical therapy. (*Herbert Kent, M.D.*)

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medical news

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Colonel Strickland Named Surgeon of Air Defense Command



Col. Benjamin A. Strickland, Jr., USAF (MC)

Colonel Benjamin A. Strickland, Jr., USAF (MC), has been assigned as Surgeon of the Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado.

Entering military service in 1935, Doctor Strickland served at many medical service facilities including more than three years at Walter Reed Army Medical Center. During World War II he served as Hospital Commander at Rapid City Air Force Base in South Dakota, Moses Lake Air Force Base in Washington, and Davis Monthan Air Force Base in Arizona; Surgeon of the Twenty-second Bomber Command; Assistant Surgeon of the India-China Division of the Air Transport Command; and as Surgeon of the Central Pacific Wing at Guam.

After World War II, Doctor Strickland's assignments were Assistant Surgeon and then Surgeon of the Pacific Division of the Air

Transport Command; Chief of the Physical Medicine Consultant Division in the Office of the Surgeon General, Army; Director of the Military Medicine Division and Chief of the Department of Internal Medicine at the USAF School of Aviation Medicine, Randolph Air Force Base, Texas.

The Gunter Branch of the USAF School of Aviation Medicine was established in October 1950 at Gunter Air Force Base, Alabama, and Doctor Strickland was assigned as the first Deputy Commandant. Seven months later he became Commandant. During this period, he was instrumental in organizing and developing the indoctrination and educational courses given at the newly established Gunter Branch.

In 1953, he was assigned as Surgeon of the Twelfth Air Force in Europe, and in 1956 was reassigned as Surgeon of the Technical Training Air Force, Gulfport, Mississippi.

Doctor Strickland was awarded the Legion of Merit in May 1958 for his achievements as Surgeon of the Technical Training Air Force. He has also been awarded the Commendation Medal with two Oak Leaf Clusters.

A 1942 graduate of the School of Aviation Medicine, Doctor Strickland is board certified in aviation medicine and in physical medicine and rehabilitation. He is the author and/or co-author of approximately thirty medical and scientific publications on various aspects of aviation medicine, and physical medicine and rehabilitation.

Doctor Strickland is a member and Fellow of the Aero Medical Association and the American College of Physicians; a member of the American Congress of Physical Medicine and Rehabilitation, the American Medical Association, and the American Academy of Physical Medicine and Rehabilitation. In March 1958 he was elected to the executive council of the Aero Medical Association for a three-year term.

Mary Putnam Jacobi Fellowship

The Women's Medical Association of the City of New York offers the Mary Putnam Jacobi Fellowship to a graduate woman physician, either American or foreign. This Fellowship will start October 1, 1959 and

will amount to \$2000, with \$1000 being available October 1, 1959. The recipient of the Fellowship will be expected to make a report to the committee at the end of the fourth month following which the second \$1000 will be awarded subject to the approval of the committee. The Fellowship is given for medical research, clinical investigation or post-graduate study in a special field of medicine. The recipient is expected to devote full time to the Fellowship but exception may be made by the committee under special circumstances.

Applications for this Fellowship may be obtained from the secretary of the committee after August 1, 1958 and must be returned before February 1, 1959 with the following information: curriculum vitae; a statement from a physician of a recent physical examination; transcripts of her college and medical school records; personal letters of recommendation from two or more physicians under whom she has studied; a statement by the applicant of the problems she proposes to investigate or the study she plans to undertake; a statement from the person under whom she proposes to study of his or her interest in her subject, and a recent photograph. All this data must be at hand before the application will be considered.

Successful candidates will be notified not later than May 1, 1959. Direct applications to Ada Chree Reid, M.D., Secretary, Mary Putnam Jacobi Fellowship Committee, 118 Riverside Drive, New York 24, N. Y.

Personals

: : denmark

= "Rehabilitation" was discussed by *Svend V. Clemmesen*, Copenhagen, at the international meeting on Internal Medicine in Philadelphia last April.

: : florida

= A former Muncie, Indiana, resident and now a member of the Florida State Commission on Care of the Chronically Ill and the Aged, *Nila Kirkpatrick Covatt*, Winter Park, addressed members of Muncie Rotary Club on the progress being made in caring for elderly persons and providing useful work beyond the so-called retirement age.

: : illinois

= Contributing his services at the Ninth Annual Postgraduate Program of the Illinois Academy of General Practice, was *Maxwell D. Flank*, Oak Park, who gave a series of lectures entitled "Manipulations, Machines, and Common Sense."

= An exhibit "Care of the Premature Infant" sponsored by *Arthur W. Fleming*, Chicago, was presented at the 118th annual meeting of the Illinois State Medical Society.

: : iowa

= On his 80th birthday, not so long ago, *Arthur Steindler*, Iowa City, professor emeritus of orthopedic surgery at SUI, announced that he has no intention of closing the private practice in which he has been engaged since 1949, when he left the university faculty after 35 years of service. He also was guest of honor at the meeting of the Robert Jones Club, an organization composed of thirty orthopedic surgeons in the United States and Canada.

= *W. D. Paul*, Iowa City, spoke at a public forum in Des Moines which was sponsored by the Iowa Chapter of the Arthritis and Rheumatism Foundation. Dr. Paul is currently president of the Iowa Chapter. At the San Francisco meeting of the AMA, he attracted large audiences to his scientific exhibit on prevention and treatment of ankle sprain.

: : kansas

= Washington University School of Medicine held its Second Annual Postgraduate Course in Geriatric Medicine and had as one of its speakers *Donald L. Rose*, Kansas City, who presented "Rehabilitation of the Elderly Person."

: : kentucky

= At the meeting of the Muldraugh Hill Medical Society, *Israel Muss*, Louisville, presented "Topic on Physiotherapy."

: : michigan

= *Joseph N. Schaeffer*, Detroit, has been appointed as special professor of physical medicine, Wayne State University. A new department of physical medicine was created at the College of Medicine when his appointment became effective. He was also recently named director of the Rehabilitation Institute of Metropolitan Detroit.

: : minnesota

= *Donald J. Erickson*, Rochester, area consultant in physical medicine and rehabilitation for the VA, was guest speaker at the Knoxville, Iowa VA Hospital last April.

= *Frank H. Krusen*, Rochester, has been appointed a member of the National Advisory Council on Vocational Rehabilitation by Secretary of Health, Education and Welfare, *Marion B. Folsom*.

: : missouri

= *D. Elliott O'Reilly*, St. Louis, was the principal speaker at the kick-off banquet held last March, launching the 1958 Easter Seal campaign for the Marion County Society. Dr. O'Reilly commended the local society for its outstanding work and successful campaigns and also gave a brief review of the history of the state society.

: : new york

= *Jerome Weiss*, New York City, was recently elected recording secretary of the New York Academy of Gastroenterology.

= *Anthony C. Cipollaro*, New York City, participated as a moderator on the panel discussing "The Diagnosis and Treatment of Light Sensitive Dermatoses," and also presented the paper, "The Present Status of Dermatologic X-Ray Therapy," at the 118th annual meeting of the Illinois State Medical Society.

= *S. G. Feuer*, Brooklyn, was a symposium participant at the meeting of the New York Section of the International College of Surgeons; he discussed the rehabilitation aspects of "Trauma of the Hand."

= A promotion of professorship in physical medicine and rehabilitation was achieved by *Donald A. Covalt*, New York City. At the 152nd annual meeting of the Medical Society of the State of New York, Dr. Covalt presented his paper "Rehabilitative Measures in Clinical Practice."

= At the 177th anniversary of the Massachusetts Medical Society, *Michael M. Dacso*, New York City, presented "Principles of Geriatric Treatment and Care." He also announced that a \$5,000 one-year fellowship was given anonymously to the department of physical medicine and rehabilitation at New York University College of Medicine. In addition, Dr. Dacso has visited the Territory of Hawaii as Special Consultant for the United States Public Health Service Bureau of Chronic Illnesses.

= *Hans J. Behrend*, New York City, was invited to deliver three lectures in Western Germany. He will discuss geriatric rehabilitation at the Weserbergland Klinik, a teaching Institution in Hoexter/Weser; and at the City Hospital in Wolfsburg; the third lecture will be given before the medical department of a veterans organization in Duesseldorf. The topic selected for this presentation is "The Present Status of Rehabilitation in the United States." Locally, Dr. Behrend reports the opening of an additional seven-story building of The Beth Abraham Home which is medically affiliated with Montefiore Hospital. The entire ground floor of this new structure is occupied by the department of physical medicine and rehabilitation.

= *Chester A. Swinyard*, New York City, has been appointed associate director of the Children's Division of New York University. Dr. Swinyard was medical director of the Rehabilitation Center at the University of Utah College of Medicine in Salt Lake City.

: : oklahoma

= *Ella M. George*, Oklahoma City, reports that the exhibit "Rehabilitation of Severely Burned Patients" prepared and presented by the Physical Medicine and Rehabilitation

Service of the Oklahoma City VA Hospital was awarded first prize among more than thirty scientific exhibits.

= *Herbert Kent*, Oklahoma City, is scheduled to attend a course in clinical prosthetics to be held at the University of California at Los Angeles.

: : pennsylvania

= *George Morris Piersol*, Philadelphia, is now medical director of National Disease and Therapeutic Index.

= The Magee Memorial Hospital for Convalescents was opened with formal ceremonies last March 9. A five story, air-conditioned, 78-bed building, it will furnish services for the rehabilitation of physically disabled patients of all income groups, races, and religions who are residents of metropolitan Philadelphia. *Henry F. Parry*, Philadelphia, is director of the institution.

= At the annual business meeting of the Pennsylvania Academy of Physical Medicine and Rehabilitation the following officers were elected: President, *William J. Erdman, II*, Philadelphia; Vice-President, *Nathan Sussman*, Harrisburg; Secretary-Treasurer, *J. Muri Johnston*, Pittsburgh; Program Chairman, *Samuel Sherman*, Pittsburgh.

: : wisconsin

= *Edwin C. Welsh*, Milwaukee, participated in a forum "Recent Advances in the Care of Arthritis" co-sponsored by the Wisconsin Chapter of the Arthritis and Rheumatism Foundation and the Milwaukee Junior Chamber of Commerce.

Wanted: Patients with these Diagnoses

Newly issued by the 500-bed Clinical Center of National Institutes of Health is a special memorandum on types of cases in which its investigators are especially interested at present time. Physicians desiring further information on possible referrals should communicate with Director, NIH Clinical Center, Bethesda 14, Md.

Acute leukemia, any age; Hodgkins disease without previous therapy; multiple basal cell cancers of skin; myeloid metaplasia; protein disturbances such as macroglobulinemia, cryoglobulinemia and idiopathic hypoalbuminemia; cancer of any type in children; choriocarcinoma.

Invasive carcinoma of urinary bladder without bony or extrapelvic metastases and without previous external radiation therapy or extravesical surgery; squamous cell carcinoma of oropharyngeal and laryngeal cavities; carcinoma of esophagus without evidence of metastases to neck or liver; carcinoma of thyroid; solitary myeloma; chondrosarcoma.

Proved or strongly suspected cases of disseminated histoplasmosis; hormone producing malignancies of adrenal gland; postoperative recurrences of adrenal malignancy; malignant hypertension; angina pectoris associated with coronary artery disease; pheochromocytomas; and adrenogenital syndrome.

AMA Appeals to Senators to Lift Medicare Restrictions

American Medical Association is continuing its effort to preserve the civilian Medicare program. Latest move was testimony before a Senate Appropriations subcommittee, with Dr. Hugh Hussey, a trustee and dean of Georgetown Medical School, as witness. The problem arose when the House cut Medicare appropriations to \$60 million in the face of estimated cost of \$90 million, and instructed the Defense Department not to use other funds for this purpose.

Dr. Hussey noted that Medicare is a fringe benefit, intended to maintain high morale in the services and reduce turnover. "We believe with Army Secretary Brucker and the Department of Defense," he said, "that the action in setting a limitation on obligations for civilian medical and hospital care for dependents could cause the eventual destruction of the Medicare program." He added it is not "in the interests of national defense" to destroy one morale program to save \$30 million, while at the same time spending \$600 million on pay raises "when both programs have the same objective."

He also pointed out that if the restrictive language is retained the right of free choice of physician and hospital would be ended and there would be a parallel increase in military facilities. He challenged testimony of military witnesses that service hospitals can provide care much cheaper than civilian (Air Force \$10 per day, Navy \$16) by quoting a Budget Bureau estimate that the military average is closer to \$44 per day when more of the actual costs are included.

When he was being questioned by Chairman Dennis Chavez (D., N. M.) Dr. Hussey observed that he hoped when the military officials are deciding on Medicare restrictions they will keep in mind the attitude of the Air Force. Dr. Hussey explained that at the last meeting of the Medicare advisory committee, of which he is a member, a spokesman for Air Surgeon General Dan Ogle said that professional competition between civilian and military hospitals is a "good thing," and he hoped the Air Force medical services could make things so attractive, efficient and "obviously good for the patients" that "we will not suffer any losses" to civilian physicians and hospitals.

Joining in the appeal to preserve Medicare were American Hospital Association, which

filed a statement; the National Medical Veterans Society (Dr. Oscar B. Hunter, Jr., testifying for Dr. Milo A. Youel); and the California Medical Association, with Dr. John M. Rumsey as witness. In addition to supporting the general arguments in favor of Medicare, Dr. Rumsey told how the California Medical Association had cooperated in setting up review committees in the 40 counties. These groups cooperate with the Army and the doctors in all areas where problems arise, "including the occasional matter of over-utilization."

Fourth Inter-American Conference on Rehabilitation

An Inter-American Conference on Rehabilitation, the fourth sponsored by the International Society for the Welfare of Cripples, will be held May 20-23, 1959, in San Juan, Puerto Rico.

A basic phase of the total ISWC program which seeks to raise the level of rehabilitation knowledge everywhere, the conference again will be designed to bring together and benefit professional, governmental and civic groups concerned with the expansion and improvement of services for the disabled. The four-day session will focus special attention on the social and vocational aspects of the rehabilitative process, and will also consider means of increasing intra-regional cooperation and training opportunities. Delegations from all the Caribbean and neighboring Latin-American nations, as well as the United States and Canada will participate.

Herman J. Flax, M.D., 301 Professional Building, Santurce 34, Puerto Rico, is serving as executive secretary of the conference.

Research-Teaching Grants Bill Tightened

In reporting out a bill to extend the program of construction grants for medical research facilities, the House Commerce Committee tightened up a provision that would make the money available also for medical school teaching facilities. The original wording would have allowed grants to multi-purpose facilities (research and teaching) if their "principal contemplated use will substantially further research in the sciences . . ." The committee changed this to read "if their principal use will be for research . . ." Thus, because their "principal use" would not be "for" research, grants could not be used to construct and equip dining halls, dormitories, etc. at medical schools, although the grants could be used for buildings and equipment that combine research and teaching.

Truthpaste, please!

A group of Congressmen who have been scrutinizing exhibition of cigarettes, weight reducers and tranquilizing drugs since last January turned their attention to toothpaste. The American Dental Association presented several hours of expert testimony purporting to show the dangers and wide extent of misleading advertising for dentifrices. Legal and monetary affairs subcommittee of House Government Operations Committee heard from Federal Trade Commission officials on what they can and cannot do to curb extravagant claims for toothpaste and drugs.

New Publications About CV Accidents

New hope and encouragement for the rehabilitation of victims of cerebral vascular accidents was announced with a new group of publications by the National Society for Crippled Children and Adults, the Easter Seal Society. These publications point out new and improved technics in the care and treatment of stroke patients and are of equal interest to professional specialists as well as to lay persons searching for practical ways to assist in the rehabilitation of a stroke victim in their families.

Walter L. Reisner, a successful businessman who is vice-president of Educators Mutual Life Insurance Company, Lancaster, Pa., suffered two strokes, a brain operation, and the loss of half his vision. He is the author of "A Stroke Needn't Strike You Out," a pamphlet which originally appeared as a two part article reprinted from the April and June 1958 issues of *The Crippled Child Magazine*, official publication of the National Society for Crippled Children and Adults.

After nine years of rehabilitation, first at home and later at a rehabilitation center, Mr. Reisner is able to move about at home with the aid of a cane and wheelchair, and perform many of the daily living solutions for a variety of problems which the stroke victim must overcome. Nursing problems, equipment for the patient cared for at home, home aids, how to apply for services, and hobbies found enjoyable are discussed. Written as a manual for other persons who have suffered a stroke, this personal account of one man's comeback is inspirational.

"Life with A Stroke" by McKenzie Buck, Ph.D., head of the speech and hearing clinic at the University of Florida, Gainesville, is a reprint of an article of how a stroke victim successfully outwitted his handicap. Dr. Buck, who became stricken more than a year ago but is now back in his office seven hours a day, teaching classes and pursuing a large number of research projects, gave a first hand account of his stroke and resulting rehabilitation when he spoke at the 1957 annual convention of the National Society for Crippled

Children and Adults. His story of his attitudes and recovery, urging that cerebral vascular accident victims be treated as individuals and not as patients, is told in this unusual article.

Nila Kirkpatrick Covalt, M.D., medical director and administrator of the Kirkpatrick Memorial Institute of Physical Medicine and Rehabilitation, Winter Park, Fla., is the author of a third publication on strokes, "Preventive Techniques of Rehabilitation for Hemiplegic Patients." Dr. Covalt presents a detailed description, including illustrations of the technics for restoring physical activity and independence in the stroke patient. Her presentation appeared originally in *G. P.*, the official publication of the American Academy of General Practice, and is distributed as a reprint by the National Society.

All three articles mentioned are available on purchase from the National Society for Crippled Children and Adults, 11 S. La Salle Street, Chicago 3, Ill. "A Stroke Needn't Strike You Out" and "Preventive Techniques of Rehabilitation for Hemiplegic Patients" cost 25 cents each per copy and "Life with a Stroke" is 10 cents per copy.

The Easter Seal Society also publishes "Rehabilitation Literature," a monthly listing of selected abstracts of current publications of interest to workers with the handicapped and numerous bibliographies of interest to those working in the field of rehabilitation of the crippled child and adult. Subscription price to this publication is \$1.00 per year.

Sinclair Oil Company Establishes Fellowships

A program to supplement Venezuela's already advanced medical facilities and technics for rehabilitating the crippled and handicapped was announced. P. C. Spencer, president of Sinclair Oil Corporation, said that his company, through its Venezuelan affiliate, Sinclair Venezuelan Oil Company, was establishing fellowships to enable a selected group of Venezuelan doctors, nurses, physical therapists, social workers and prosthetic technicians to obtain further training and experience at the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center and other rehabilitation centers in the United States.

The program will be administered by the World Rehabilitation Fund and its president, Dr. Howard A. Rusk, who is Professor and Chairman, Department of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center. Dr. Rusk has helped establish rehabilitation programs in some 36 countries, principally through the International Society for the Welfare of Cripples, a non-governmental organization. He is also a consultant to the United Nations and the United States government on rehabilitation matters and a member of the expert advisory com-

mittee on rehabilitation of the World Health Organization.

The Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, is the world's largest rehabilitation center. This year it has 45 international trainees from 27 nations participating in its training program.

In commenting on the new program, Dr. Rusk, who accompanied Mr. Spencer to Caracas, said, "The Sinclair Oil Corporation and the World Rehabilitation Fund have chosen Venezuela for this program because of its excellent medical, surgical and hospital services. Rehabilitation is a new concept of medical responsibility which has been developed in the last two decades, but to carry out modern, dynamic rehabilitation procedures, high quality basic medical, surgical and hospital services must be available."

Dr. Rusk then likened Venezuela in this respect to Australia where he was invited in late 1956 by the Commonwealth of Australia to advise that nation in their rehabilitation plans and make arrangements for Australian physicians and other rehabilitation personnel to come to New York for advanced training.

Rehabilitation has become an increasing need in the more developed nations of the world such as Venezuela, Dr. Rusk explained, for advanced public health and modern medical care have increased the life span. "Today, as in Australia and the United States, there are thousands of persons in Venezuela," Dr. Rusk explained, "who would have died a few years ago with the same medical problems. Today, thanks to modern medicine and surgery, these people survive, but many suffer from physical disabilities. Our aim in rehabilitation, the third phase of medicine which takes the patient from the bed to the job, is to give these disabled people the necessary training and help to permit them to live useful, productive and happy lives. They are retrained to live within the limits of their disabilities, but to the hilt of their capabilities."

Dr. Rusk expressed the hope that when the program was completed Venezuela might serve as a regional center for the training of rehabilitation personnel from other South American republics. A committee consisting of leading Venezuelan medical and rehabilitation experts will select the men and women to be trained under the program. The program will run for three years and all expenses will be paid by Sinclair Venezuelan Oil Company.

"Venezuela already has an advanced and notable program for helping handicapped people overcome their physical ills and become self-supporting, contributing members of their communities," Mr. Spencer said in announcing the program. "It is our hope that Sinclair Fellowships will add strength to the existing work now being so ably done by the Children's Orthopedic Hospital under the

leadership of industrialist Eugenio Mendoza and Dr. Carlos Bustamante, the rehabilitation center of the Venezuelan Social Security Institute under the guidance of Alejandro Rhode, and the Patronato Nacional Ancianos Invalidos under Dr. J. Quintero Quintero."

Mr. Spencer cited President Eisenhower's State of the Union Message in which the President proposed an international "Science for Peace" program to attain "a good life for all." Mr. Spencer said that "we believe the Sinclair Fellowships for Rehabilitation is a step in that direction."

Through its affiliate, Sinclair Venezuelan Oil Company, Sinclair presently maintains a number of medical facilities and services in Venezuela, including a small hospital at its Santa Barbara Camp in Eastern Venezuela, a clinic at its refinery at Puerto de la Cruz and medical attention at its other operating centers. Dr. Hermagenes Rivero is the company's physician and consultant in Caracas, while Dr. Manuel Palacio is physician in charge of all field operations.

The National Foundation

The National Foundation for Infantile Paralysis has dropped the reference to a specific disease in its title and will be known in the future as The National Foundation. Projected plans center on the development of an organized voluntary force in the fields of medical research, patient aid, and professional education, flexible enough to meet new health problems as they arise. The first new goals will be research and eventually a patient aid program in arthritis and congenital malformations. Virus research will be continued and expanded as will the investigations currently being conducted into the disorders of the central nervous system. No attempt will be made to duplicate the work of other voluntary agencies, Basil O'Connor, President of the organization said, although as scientific breakthroughs occur they will be pursued wherever they lead, with the general objective the improvement of man's health. All five areas of the expanded program will be financed through the traditional March of Dimes conducted annually in January.

The new program was adopted after five years of exhaustive investigation of areas of need in the health field and careful assessment of the strengths of the National Foundation that could be applied to other problems. Conferences were held with medical, civic and governmental leaders, as well as with representatives of National Foundation Chapters from all regions of the country. The Board of Trustees approved the program on May 28, 1958.

The keynote of the National Foundation's future program will be research. At this moment virologists have uncovered clues

pointing to problems little dreamed of ten years ago. Freedom to follow research clues wherever they lead will be combined with necessary limitations on patient aid in the beginning. The limitations result from the enormity of the problem: at least 11,000,000 persons have arthritis and rheumatism; 250,000 children are born each year with significant congenital malformations (excluding birth injuries), and an estimated 150,000 persons who have had paralytic poliomyelitis will require some assistance in the years ahead.

The National Foundation plans to offer patient aid at first only to arthritis patients through 18 years of age and to children suffering from malformations of the central nervous system, also through age 18. Rheumatoid arthritis, the most serious of the rheumatic cripples, annually affects an estimated 30,000 children and adolescents of whom some 16,000 can be expected to seek treatments each year. It is planned to work primarily with this group in the beginning because the most good can be done for them and the most learned of benefit to all arthritis sufferers.

Some 8,000 patients with treatable defects of the central nervous system will also be aided. Among these conditions are spina bifida, cnephalocoele, and hydrocephalus. Although children with congenital mental retardation will not be among those aided, there is strong evidence that the research programs now under way will contribute to ultimate prevention and treatment of this problem.

National Foundation research grantees, working in the field of cellular biology to find tissue culture cells in which polio virus could be grown, have discovered new knowledge about cell behavior. This knowledge, in turn, focused attention on abnormal cells which, it is believed, account for at least half of the significant congenital malformations. It is suspected that the other half is caused by infections or injury to the embryo during pregnancy.

Achievements in the rehabilitation of severely disabled polio patients will have renewed meaning when these professional skills are applied to arthritis patients as well as to persons handicapped by congenital malformations.

The National Foundation's professional education program of tomorrow will continue its flexible structure, functioning essentially through the channels of scholarships and fellowships; assistance to professional schools, associations and agencies and production and distribution of research and teaching aids.

Newly Registered Therapists

July 22, 1958

Abbey, Roberta S., 1658 Bohland Ave., St. Paul

Adelsberg, Stanley L., 1983 Sedgwick Ave., New York City
 Allen, Patricia R., 3910 Lookout Pl., Columbia Heights, Minn.
 Anderson, Barbara J., 910 S. 10th St., Escanaba, Mich.
 Andrau, Maya H., Woodstock, N. Y.
 Becker, Alvin R., 1209 Poyntz, Manhattan, Kans.
 Becker, Marjorie C., 623 N. "E" St., Hamilton, Ohio
 Buck, Catherine A., 125 Oak Grove St., Minneapolis
 Carrington, Ann L., 39 Henry St., Everett, Mass.
 Carroll, Florence, W. 511 Second Ave., Spokane, Wash.
 Clusiau, Marilyn K., 105 E. White St., Ely, Minn.
 Collins, Donna Lou, 338 Shenley Dr., Erie, Pa.
 Conc, James R., RR #2, Elmore, Minn.
 Craven, Richard C., Utica, Minn.
 Dameron, Frances B., 526 W. Cambridge, Phoenix, Ariz.
 David, Eugene C., 105 McKinley Pkwy., Buffalo
 Deibert, Marilyn J., 4312 Upton Ave., N., Minneapolis
 Dow, Margot J., 412 Hudson Ave., Clarendon Hills, Ill.
 Erickson, William L., 4211 W. Branson St., Minneapolis
 Flynn, Sister M. Martin, St. Francis Convent, Box 42, Springfield, Ill.
 Hall, Helen L., Lutsen, Minn.
 Hansen, Donabelle Rae, 1628 Miller St., Worthington, Minn.
 Harris, Billy H., 120 7th St., Deer Park, Texas
 Hart, Ruth Ann, 714 Holly Ave., St. Paul
 Haug, Jacqueline Ann, Brussels, Ill.
 Havighurst, Dorothy C., 5816 Blackstone Ave., Chicago
 Hochman, Joyce, 713 Hastings St., Pittsburgh
 Hummel, Robert A., Box 147, Tower City, N. D.
 Jansen, Frederick B., 114 E. Elm St., Sycamore, Ill.
 Johnson, Donald C., 2914 3rd Ave., W., Hibbing, Minn.
 Johnson, Mavis M., Cannon Falls, Minn.
 Jones, Robert E., 1602 Nielson St., Utica, N. Y.
 Joseph, James W., 1933 Fremont Ave., S., Minneapolis
 Langford, Sue Ann, Box 172, Lake Butter, Fla.
 Libby, Alton E., College of Medical Evangelists, 1720 Brooklyn Ave., Los Angeles
 Matthews, Lynne M., 106 Woodland Dr., Pittsburgh
 McGovern, Sharon K., 859 Franklin, S. E., Grand Rapids, Mich.
 McNerney, Diana C., 1412 Washington Heights, Ann Arbor, Mich.
 Mitchell, Barbara L., 298 N. W. 104th Terrace, Miami, Fla.

Nelson, Linda Rae, 19145 Runyon, Detroit
 Oberlin, Elizabeth Ann, 2430 Shawnee Dr.,
 Springfield, Ohio
 Palmer, Mary C., 4966 Potomac Ave., St.
 Louis
 Plaisted, Colette J., 3632 33rd Ave., S.,
 Minneapolis
 Proshek, Susan G., 1170 W. County Rd. B, St.
 Paul
 Reading, Dorothy J., 16910 Cruse Ave.,
 Detroit
 Redden, Thomas P., Jr., 146-06 Hawthorne
 Ave., Flushing, N. Y.
 Rowe, Donna V., 619 W. Maplehurst, Fern-
 dale, Mich.
 Sahrman, Shirley Ann, 931 Brownell, Glen-
 dale, Mo.
 Sarason, Constance M., 19667 Renfrew,
 Detroit
 Schmidt, Elizabeth C., Quarters 47D, Max-
 well AFB, Ala.
 Scholz, Anne P., 235 Blackmer Pl., St. Louis
 Showen, Gail J., 14096 Victoria, Oak Park,
 Mich.
 Simpson, Nancy C., Morning Sun, Iowa
 Smith, Kay D., Box 773, Wolf Point, Mont.
 Souzis, Leanne T., 2076 20th Lane, Brooklyn
 Sullivan, Rita M., 6253 Rosebury Dr., St.
 Louis
 Tannenbaum, Edris C., 506 E. Main St.,
 Clarksburg, W. Va.
 Van Lanen, Patricia Ann, High Point Rd.,
 Peoria, Ill.
 Welcome, Mary Kathleen, 3948 5th St., N. E.,
 Minneapolis
 Wristers, Johanna R., 731 Fillmore Ave.,
 New Orleans
 Yannoussi, Magda E., 745 Van Duzer St.,
 Staten Island, N. Y.

July 30, 1958

Blonski, Katherine B., 2552 S. 15 Pl., Mil-
 waukee
 Boder, Ina Mae, 157 Patton Blvd., New Hyde
 Park, N. Y.
 Collopy, Susan, 2930 N. Marietta Ave.,
 Milwaukee
 Cybulski, Francine M., 3147 S. 33 St., Mil-
 waukee
 Goodwine, Marylyn J., 518 E. Lincoln St.,
 Hoopston, Ill.
 Haselbarth, Waldemar A., 6307 W. Keefe
 Ave. Pkwy., Milwaukee

Kramer, Gloria, 2229 Valentine Ave., Bronx,
 N. Y.
 Murphy, Nora E., 2760 N. 68th St., Mil-
 waukee
 Price, William G., 7631 California Ave.,
 Westminster, Calif.
 Rotta, Faith H., 2642 S. 15th Pl., Milwaukee
 Talbot, Kathleen Ann, 715 Georgia St.,
 Sturgeon Bay, Wis.
 Wade, Shirley L., 4549 17th Ave., S.,
 Minneapolis

July 31, 1958

Tsui, Florence F., 4504 First Ave., S.,
 Minneapolis

August 18, 1958

Allegr, Thomas J., 1613 Everett, Kansas City,
 Kans.
 Baker, Marilyn R., 1811 Court St., Beatrice,
 Neb.
 Barnes, Craig A., 211 Haines Ave., Barring-
 ton, N. J.
 Collingwood, Martha Jane, Johnson City,
 Kans.
 Danielson, Jane N., 616 S. Broadway, Hering,
 Kans.
 Drake, Beverly Ann, Conway Springs, Kans.
 Dunn, William L., Severy, Kans.
 Johnson, Laura A., Box 476, Medicine Lodge,
 Kans.
 Lawrence, Sara F., 2101 Louisiana, Lawrence,
 Kans.
 Marcum, Velda E., 6800 Reeds Rd., Over-
 land Park, Kans.
 Morris, Rudolph C., 516 Washington Blvd.,
 Kansas City, Kans.
 Porter, Joan D., 2010 Good Hope St., Cape
 Girardeau, Mo.
 Reynolds, Marilyn, Box 527, Lake Village,
 Ark.
 Scott, Darlene L., 3934 8th St. Pl., Des
 Moines, Ia.
 Sinclair, Bettie N., 3808 Terrace Ave., St.
 Joseph, Mo.
 Stucky, Carole June, 3938 Mercier, Kansas
 City, Mo.
 Weaver, Mary Jo, 220 S. Chickasaw, Bartles-
 ville, Okla.
 Woodward, Charlene J., 307 N. Sycamore, Iola,
 Kans.

(Medical News continued on following page)

DECEASED MEMBERS**DR. DENNIS E. SINGLETON**

Dr. Dennis E. Singleton, Marion, Indiana, died on January 11, 1958.

Dr. Singleton was born in Paris, Mo., June 21, 1882. He was graduated from Hospital College of Medicine, Louisville, Ky., 1905 and was licensed to practice medicine in Indiana, Illinois and Missouri; certified to the American Board of Psychiatry; Fellow of American Psychiatric Association.

DR. WILLIAM J. FITZPATRICK

Dr. William J. Fitzpatrick, Providence, R. I., died on October 27, 1957.

Dr. Fitzpatrick was born in New York City on October 5, 1906. He was graduated from the Long Island College of Medicine, New York University, 1932; licensed in New York, 1932; veteran of World War II and was associated with the VA Hospital at Providence, R. I.

DR. ALEXANDER J. KOTKIS

Dr. Alexander J. Kotkis, St. Louis, died at the age of 62 on March 23, 1958.

Dr. Kotkis was born in Gilberton, Pa., September 11, 1895. He was graduated from St. Louis University School of Medicine in 1921; certified by the American Board of Physical Medicine and Rehabilitation; member of the American Academy of Physical Medicine and Rehabilitation; member of the St. Louis Medical Society.

DR. GUY H. MCKINSTRY

Dr. Guy H. McKinstry, Washington, Pa., died at the age of 73 on December 22, 1957.

Dr. McKinstry was graduated from the University of Pennsylvania School of Medicine, Philadelphia in 1910; past-president of the Washington County Medical Society; a member of the Blue Shield of Pennsylvania, having been its executive director for ten years; past-president of the Washington Rotary Club; formerly practiced in Pittsburgh, where he was associated with St. Margaret's Hospital; director and president of Hillview Clinic.

DR. HOWARD L. SCHNUR

Dr. Howard L. Schnur, Houston, Texas, died at the age of 40 on March 22, 1958 of a cerebral hemorrhage secondary to acute leukemia.

Dr. Schnur was born on October 29, 1917, New York. He was graduated from Columbia University College of Physicians and Surgeons in 1949. He was assistant chief of the department of physical medicine at the VA Hospital in Houston; served as consultant in physical medicine at the M. D. Anderson Hospital and Tumor Institute at Houston. He held membership in the Harris County Medical Society, The Texas Medical Association, The American Medical Association and the Houston Academy of Medicine.

DR. VICTOR C. PEDERSEN

Dr. Victor C. Pedersen, Kensington, Md., died at the age of 90 of congestive heart disease on April 9, 1958.

Dr. Pedersen was born in New York City on November 15, 1867; was graduated from Columbia University College of Physicians and Surgeons in 1898. He was a fellow of the American College of Surgeons; an associate member of the American Medical Association; for many years practiced in New York City where he was associated with St. Mark's Hospital; author of numerous books and articles on urology and sociology.

DR. JOSEPH E. G. WADDINGTON

Dr. Joseph E. G. Waddington, Detroit, died at the age of 93 on May 11, 1958.

Dr. Waddington was graduated from the Indiana College of Medicine and Midwifery, Indianapolis in 1886.

Recent Publications by Members

Gordon M. Martin, "A Bipolar Stimulating Electrode." Proceedings of the Staff Meetings of The Mayo Clinic, July 9, 1958.

Herbert Kent, "Results in Spinal Cord Injuries with Early Physical Medicine and

Rehabilitation." The Journal of the Oklahoma State Medical Association, July, 1958.

Clarence Dail, and co-authors, "Physical Therapy Technics for Bulbar Poliomyelitis." The Physical Therapy Review, August, 1958.

Odon F. von Wersowetz, "Rehabilitation Problems of the Physically Handicapped Child

in Texas." *Texas State Journal of Medicine*, July, 1958.

Jack Sokolow, Howard A. Rusk and co-authors, "Functional Approach to Disability Evaluation." *The Journal of the American Medical Association*, July 26, 1958.

The following articles were published in *Arthritis and Rheumatism*, August, 1958:

Robert M. Stecher and co-authors, "Probable Rheumatoid Arthritis or Psoriatic Arthropathy with Absorptive Phenomena: Report of a Case."

Howard A. Rusk, "Current Comment: Employment of Arthritis Patients."

Books Received

Books received are acknowledged in this column as full return for the courtesy of the senders. Reviews will be published in future issues of the journal. Books listed are not available for lending.

A Psychiatrist Works with Blindness by Cholden; **Progress in Arthritis** by Talbott and Lockie; **Action of Radiation Tissues** by Lacassagne and Gricouroff; **Orthopedic Diseases** by Aegerber and Kirkpatrick; **Crime and Insanity** by Nice; **A Search for Man's Sanity, Selected Letters of Trigrant Burrow**; **Annual Review of Medicine**, Volume 9 by Rytand; **Cerebral Palsy** by Russ and Soboloff; **How to Live with Diabetes** by Dolger and Seeman; **Rehabilitation after Illness and Accident** by Ling and O'Malley; **War Blinded Veterans in a Postwar Setting**, Veterans Administration; **Medical Electric Equipment** by Molloy; **The Cerebral-Palsied Child** by Phelps, Hopkins and Cousins; **Ligament and Tendon Relaxation (Skeletal Disability) Treated by Prolotherapy**, Third edition, by Hackett; **The Physiology of Man** by Langley and Ceraskin and **Clinical Orthopaedics**, Volume 11, edited by De Palma.

Physical Medicine Section Meets

The Physical Medicine Section of the California Medical Association met on April 27-28 and presented a series of scientific papers on Sunday, April 27, at its own section. In conjunction with the Industrial Medicine and Surgery Section, it presented more scientific papers on Monday, April 28. This was the first year in which the Physical Medicine Section was recognized and made a part of the California Medical Association specialties section.

The following papers were presented: "The Scientific Basis for Neuromuscular Reeducation — Practical Applications," Harvey E. Billig, Jr.; "Seizure Problems in Cerebral Palsied Adults," Joseph E. Maschmeyer; "Results of a Long-Term Physical Treatment Program in a Severely Involved Quadriplegic Resulting from Anterior Poliomyelitis," Richard W. Moore; "The Management of Chronic Progressive Respiratory Insufficiency,"

Clarence W. Dail; "Rehabilitation of the Aged," John Aldes; "Analysis and Treatment of the Low Back Pain Syndrome," Rene Cailliet; "Physical Medicine in the Treatment of Arthritis," Edward P. Reese; "Peripheral Surgery in Adult Hemiplegia," Walter J. Treanor; "Physical Treatment of Cervical Strain," O. Leonard Huddleston; "Physiological Basis and Clinical Application of Ultrasonic Therapy," David Rubin and "Uses and Limitations of Electromyography" by Robert V. Miller, Jr.

The meetings were most interesting and were well attended.

The following officers were elected for 1958-59: David Rubin, Chairman; Carrie Chapman, Secretary and Joseph E. Maschmeyer, Assistant Secretary.

The second meeting will be held in San Francisco in February, 1959.

Orthopedic Group Meets

The National Assembly of the Orthopedic Appliance and Limb Manufacturers Association will meet in Miami Beach, Florida at the Eden Roc Hotel on October 26-30.

Please direct inquiries to Lester A. Smith, Assistant Director of the Orthopedic Appliance and Limb Manufacturers Association, 411 Associations Bldg., Washington 6, D. C.

American Cancer Society Scientific Session Program Biltmore Hotel, New York

October 20-21, 1958

Symposium on Cancer
of the Colon and Rectum

(In addition to the presentation of papers, the speakers will participate in a panel discussion as a part of each session. All sessions are open to doctors and medical students.)

Monday, October 20, 1958

Morning Session — 9:00 A.M.

*"Pathogenesis and Etiology of Cancer
of the Colon and Rectum"*

Dr. Gilbert J. Dalldorf, The National Foundation for Infantile Paralysis, New York, New York;

Dr. Cuthbert E. Dukes, St. Mark's Hospital, London, England;

Dr. Elson B. Helwig, Armed Forces Institute of Pathology, Washington, D. C.;

Dr. Ferdinand C. Helwig, St. Luke's Hospital, Kansas City, Missouri;

Dr. David A. Wood, University of California, School of Medicine, San Francisco, California.

Afternoon Session — 2:00 P.M.

*"Diagnosis of Cancer
of the Colon and Rectum"*

Dr. Henry L. Bockus, Univ. of Pennsylvania Graduate School of Medicine, Philadelphia, Pennsylvania;

- Dr. Fred J. Hodges, University of Michigan Medical School, Ann Arbor, Michigan;
 Dr. Raymond J. Jackman, Mayo Clinic, Rochester, Minnesota;
 Dr. Eugene P. Pendergrass, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania;
 Dr. Howard F. Raskin, University of Chicago Clinics, Chicago, Illinois;
 Dr. Rupert B. Turnbull, Cleveland Clinic, Cleveland, Ohio.

Tuesday, October 21, 1958
 Morning Session — 9:00 A.M.

"Meeting the Problem of Spread of Cancer of the Colon and Rectum"

- Dr. Warren H. Cole, University of Illinois College of Medicine, Chicago, Illinois;
 Dr. J. Englebert Dunphy, Harvard Medical School, Boston, Massachusetts;
 Dr. Warfield M. Firor, Johns Hopkins Hospital, Baltimore, Maryland;
 Dr. Richard K. Gilchrist, University of Illinois College of Medicine, Chicago, Illinois;
 Dr. Ulrich K. Henschke, Memorial Center for Cancer and Allied Diseases, New York, New York;
 Dr. George E. Moore, Roswell Park Memorial Institute, Buffalo, New York;
 Dr. I. S. Ravdin, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania.

Afternoon Session — 2:00 P.M.

"Treatment of Cancer of the Colon and Rectum"

- Dr. Frederick A. Collier, University of Michigan School of Medicine, Ann Arbor, Michigan;
 Dr. Michael R. Deddish, Memorial Center for Cancer and Allied Diseases, New York, New York;
 Dr. Cuthbert E. Dukes, St. Mark's Hospital, London, England;
 Dr. George A. Hallenbeck, Mayo Clinic, Rochester, Minnesota;
 Mr. H. E. Lockhart-Mummery, St. Mark's Hospital, London, England;
 Dr. Leland S. McKittrick, Harvard Medical School, Boston, Massachusetts;
 Dr. Howard A. Patterson, Columbia University College of Physicians & Surgeons, New York, New York;
 Dr. Calvin M. Smith, Abington Hospital, Philadelphia, Pennsylvania, and
 Dr. Claude E. Welch, Massachusetts General Hospital, Boston, Massachusetts.

Inquiries concerning this program should be addressed to: Director, Professional Education, American Cancer Society, Inc., 521 West 57th Street, New York 19, New York.

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- "Employment Outlook for Physical Therapists: A Survey of Salary and Personnel Policies" by Augustin & Ehmann. (Reprint from August, 1957 Archives of Physical Medicine and Rehabilitation)
- American Registry of Physical Therapists: Booklet of Information.
- Guide Law: An Act Defining and Regulating Physical Therapy, etc.
- By-Laws of the American Registry of Physical Therapists.

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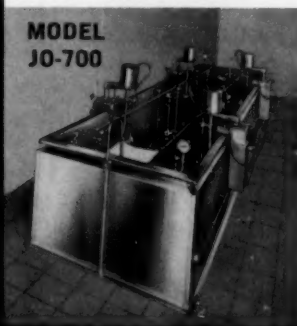
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To stimulate interest in the field of physical medicine and rehabilitation, the American Congress of Physical Medicine and Rehabilitation will award annually, a prize for an essay on any subject relating to physical medicine and rehabilitation. The contest, while open to anyone, is primarily directed to interns, residents, graduate students in the pre-clinical sciences and graduate students in physical medicine and rehabilitation. The Essay Award Committee suggests that members of the American Congress and American Academy of Physical Medicine and Rehabilitation bring this announcement to the attention of interested persons. The following rules and regulations apply to the contest:

1. Any subject of interest or pertaining to the field of physical medicine and rehabilitation may be submitted.
2. Manuscripts **must be** in the office of the American Congress of Physical Medicine and Rehabilitation, 30 N. Michigan Ave., Chicago 2, not later than March 2, 1959.
3. Contributions will be accepted from interns, residents, graduate students in the pre-clinical sciences, and graduate students in physical medicine and rehabilitation.
4. The essay must not have been published previously.
5. The American Congress of Physical Medicine and Rehabilitation shall have the exclusive right to publish the winning essay in its official journal, the ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION.
6. Manuscripts must not exceed 3000 words (exclusive of headings, references, legends for cuts, tables, etc.), and the number of words should be stated on the title page. An original and one carbon copy of the manuscript must be submitted.
7. The winner shall receive a cash award of \$200.
8. The winner shall be determined by the Essay Award Committee composed of four members of the American Congress of Physical Medicine and Rehabilitation.
9. All manuscripts will be returned as soon as possible after the name of the winner is announced.
10. The American Congress of Physical Medicine and Rehabilitation reserves the right to make no award if, in the judgment of the Essay Award Committee, no contribution is acceptable. Announcement of the winner will be made at the annual meeting.

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